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JOURNAL OF THE BRITISH MEDICAL ASSOCIATION

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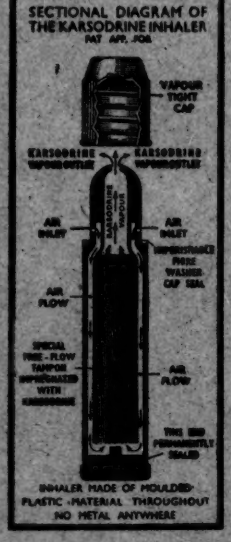

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY MARCH 10 1945

THE INCIDENCE OF PEPTIC ULCER AT ST. THOMAS'S HOSPITAL, 1910–37

BY

Sir HENRY TIDY, D.M., F.R.C.P.

Consulting Physician to St. Thomas's Hospital

Admissions for peptic ulcer to St. Thomas's Hospital between 1910–13 and 1922–37 are here examined to obtain an indication of the trends. The hospital was in military use during the first world war, and records between 1914 and 1921 are not available or not satisfactory. Anastomotic ulcers have not been included, nor have admissions for haemorrhage in which the diagnosis was not established. For the period 1910–13 the accuracy of diagnosis in the living may be doubtful. For the period 1922–37 most diagnoses were confirmed by radiographs, operation, or necropsy.

Periods of four years have been frequently used in order to obtain sufficient numbers for comparison. In 1910–13 admissions for peptic ulcer numbered 463, and in the sixteen years 1922–37 they numbered 3,336 (Table I). There are various

TABLE I.—*Summary of Admissions for Peptic Ulcer*

	Admissions			Ratio ♂ to ♀
	Total	Male	Female	
1910–13:				
Gastric ulcer	319	114	205	0·6
Duodenal ulcer	144	138	6	23·0
Ratio G.U. to D.U. ..	2·2	0·8	34	(1·2)
1922–37:				
Gastric ulcer	2,189	1,580	609	2·6
Duodenal ulcer	1,147	1,025	122	8·4
Ratio G.U. to D.U. ..	1·9	1·5	5	(3·6)

Ratio of sexes gives the figure for males, regarding females as unity.
Ratio for G.U. and D.U. gives the figure for G.U., regarding D.U. as unity.

methods by which the incidence can be recorded and charted to show the trends. By one method the actual numbers of admissions are compared, and this has the advantage of being easily followed. But accuracy of the trends and the relation of the trends to each other are dependent on the number of beds remaining reasonably constant and being approximately the same for the two sexes. For example, the total number of admissions in 1910–13 was about two-thirds of the later periods. Another method is to record the hospital admission rates—that is, the proportion which admissions for the disease in question bear to the total hospital admissions. This method eliminates differences in the bed complements and numbers of admissions, and also gives an index which can be used for comparison between different hospitals. A difficulty of the method is to decide what admissions should be accepted for the denominator. It was decided here to omit admissions for pregnancy. A second point is that the incidence of peptic ulcer is very low under 20 years of age and total hospital admissions consequently contain a large block of dead weight in this age group. A further point is that the rates for the groups over 40 and under 40 years—the latter practically being between 20 and 40 years—should properly be calculated on the admissions in each age group. Few hospitals would be able to give such figures over a series of years without great labour. At St. Thomas's Hospital they are obtainable fairly easily between the years 1922 and 1929 (Table II). Admissions in the three age groups and for the two sexes do not differ grossly from each other. Hospital admission rates based on these age- and sex-group admissions thus show approximately the same trends and the same relation of the trends as when calculated on the total admissions for each sex, although the resulting index is necessarily different. It was therefore decided not to undertake the labour of counting such admissions. Hospital admission rates therefore, when here used, are calculated on total admissions at all ages for the sex concerned, omitting admissions for pregnancy.

TABLE II.—*Annual Admissions by Age and Sex Groups*
(00 omitted. Includes all admissions except for pregnancy)

	Males			Females		
	Age Groups (years)			Age Groups (years)		
	0–20	20–40	40–	0–20	20–40	40–
1922	11	10	12	9	10	11
1923	13	13	13	11	13	12
1924	14	13	14	12	11	13
1925	15	14	14	12	14	14
1926	15	14	15	12	14	14
1927	14	15	15	12	13	14
1928	14	15	16	11	15	15
1929	13	17	17	12	15	16

1910–13: Annual admissions for males about 3,100; for females, about 2,800.
1930–37: Annual admissions for males, range 4,550 to 4,700; for females, range 4,150 to 4,350.

The number of admissions, deaths, and hospital admission rates (H.A.R.) are recorded for four-year periods in Table III, subdivided for gastric ulcer and duodenal ulcer, sex, and age groups under and over 40 years. Annual admissions for males are recorded in Figs. 1 and 2 and for females in Fig. 3. Mean

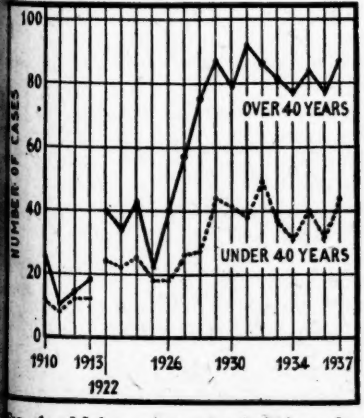

FIG. 1.—Males. Annual admissions for gastric ulcer.

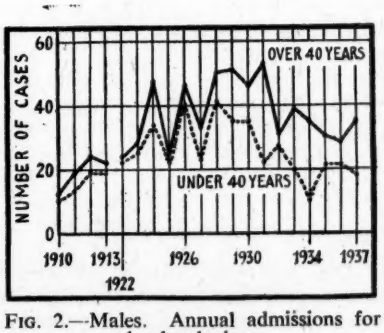

FIG. 2.—Males. Annual admissions for duodenal ulcer.

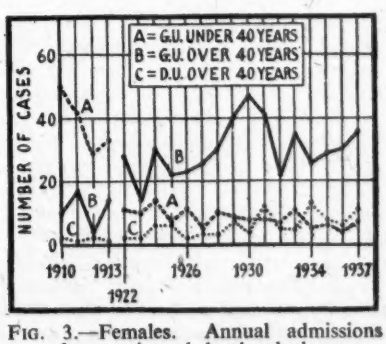

FIG. 3.—Females. Annual admissions for gastric and duodenal ulcer.

TABLE III.—*Peptic Ulcer: Admissions and Deaths*

	Period	Total Admissions	Under 40 Years			Over 40 Years			Hospital Admission Rate	
			Admissions	Deaths	Case Mortality %	Admissions	Deaths	Case Mortality %	Under 40 Years	Over 40 Years
					Males					
Gastric ulcer	1910–13	114	47	9	19	67	16	24·0	0·39	0·54
	1922–25	228	89	8	9	139	27	19·4	0·57	0·90
	1926–29	374	115	4	3·5	259	40	15·0	0·64	1·48
	1930–33	503	165	12	7·2	338	45	13·6	0·89	1·79
	1934–37	475	150	3	2	325	38	11·6	0·80	1·73
	Total 1922–37	1,580	519	27	5·2	1,061	150	14·1		
Duodenal ulcer	1910–13	138	61	9	15	77	27	35·0	0·50	0·62
	1922–25	233	110	7	6·4	123	14	11·5	0·72	0·78
	1926–29	321	140	3	2	181	24	13·0	0·80	1·04
	1930–33	272	103	9	8·8	169	18	11·0	0·55	0·90
	1934–37	199	70	4	6	129	15	11·6	0·38	0·69
	Total 1922–37	1,025	423	23	5·4	602	71	11·8		
					Females					
Gastric ulcer	1910–13	205	160	11	7	45	7	16	1·47	0·43
	1922–25	136	42	2		94	9		0·30	0·67
	1926–29	152	35	1		117	11		0·21	0·74
	1930–33	178	34	2		144	14		0·17	0·73
	1934–37	143	22	—		121	11		0·12	0·67
	Total 1922–37	609	133	5	4	476	45	9		
Duodenal ulcer	1910–13	6	1	—		5	1		0·01	0·04
	1922–25	21	5	—		16	1		0·03	0·11
	1926–29	23	6	—		17	2		0·04	0·10
	1930–33	33	6	3		27	2		0·03	0·14
	1934–37	45	14	1		31	3		0·07	0·16
	Total 1922–37	122	31	4		91	8	9		

Hospital admission rates are expressed as percentages of total admissions at all ages for the sex concerned, excluding pregnancy in females.

hospital admission rates for four-year periods also are recorded in a graph (Fig. 4), and give a general view of the trends over the period.

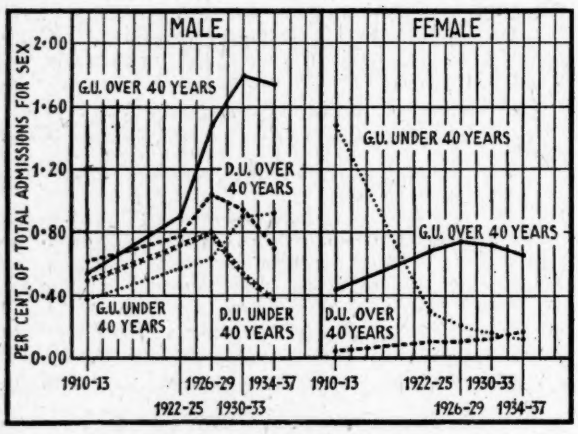

FIG. 4.—Hospital admission rates for peptic ulcer in four-year periods.

General Features of the Trends of Admissions

The number of admissions, and the H.A.R. for gastric ulcer in males over 40, rose slowly from 1910–13 to 1922–5. It then rose so rapidly between 1925 or 1926 and 1929 that it more than doubled. Subsequently the rise ceased, but the level was maintained. While the rates for the four groups—viz., G.U. and D.U. under and over 40 years—in males were close together until 1925, this group now far exceeded the others. The trend for gastric ulcer under 40 years is not dissimilar to that for the older group, but the rises are less and the rates on a much lower level; the rise is slight until 1926, but there is then a fairly sharp increase to a maximum in 1929 or 1932, followed by a level rate or possibly a slight fall.

The trends for duodenal ulcer differ from those for gastric ulcer. The trends for the two age groups of D.U. are close together throughout, unlike those for G.U. There is an irregular rise in both age groups to a maximum about 1928–9. Subsequently there is a rapid fall, so that the H.A.R. in 1934–7 for the age group over 40 is only slightly higher than 1910–13, while for the group under 40 it is definitely lower.

For females there is a spectacular fall in admissions for gastric ulcer under 40 years. While in 1910–13 it was the large single group of peptic ulcer for either sex, it is now almo extinct. Gastric ulcer over 40 years in women showed a stea rise until 1930, but without the rapid increase seen in ma and at a much lower rate. Admissions tended to fall aga after 1930. Admissions of females for duodenal ulcer bo over and under 40 years are very few. Both age groups sh a slight, but only slight, increase. As with males, the rates the two age groups are close together for D.U. and wide apart for G.U.

There are no other hospital statistics at present by whi these results can be checked. They can be compared to so extent for certain periods with the course of the death ra for London (Administrative County), although unfortunate G.U. and D.U. are not separated in the Registrar-Genera Returns after 1930 (Tidy, 1944). The death rates for Lond show a very sharp rise for G.U. in males over 40 years fro about 1921, the rate being more than doubled by 1930 (Fig. The death rate for D.U. also doubled in this period, but w throughout about half that for G.U. The rate for G.U. still rising up to 1930, but the rate for D.U. ceased to rise af 1928. Subsequent to 1930 the combined death rate for G. and D.U. in this age group suddenly ceased to rise and beca almost stationary.

Deaths for males under 40 years for both G.U. and D.U. small in number, but the rate showed a slight increase for ea between 1921 and 1930, then fell again, and the combined r was the same in 1937 as in 1921.

For females, the death rate for G.U. under 40 years h fallen rapidly for several decades and was still falling in 19 For G.U. over 40 years the rate rose 50% between 1921 a 1930. After 1930 the combined rate for G.U. and D.U. this age group is stationary; as deaths from D.U. are alm negligible, the combined rate is practically due to G.U., wh therefore could not have been rising. Thus death rates a admissions after the war both show a rapid rise for males o 40 years, which suddenly ceased about 1930. The rise and rates in both are much greater for G.U. than for D.U., a the rise stopped earlier for D.U. than for G.U. Both de

rates and admissions show a 50% rise from gastric ulcer in females over 40 years, ceasing in 1930, which does not appear in the death rates for England as a whole or for Scotland. The fall in females under 40 years is common to the whole of Britain for several decades, the most rapid fall being between 1900 and 1920. Thus where the trends of the death rates for

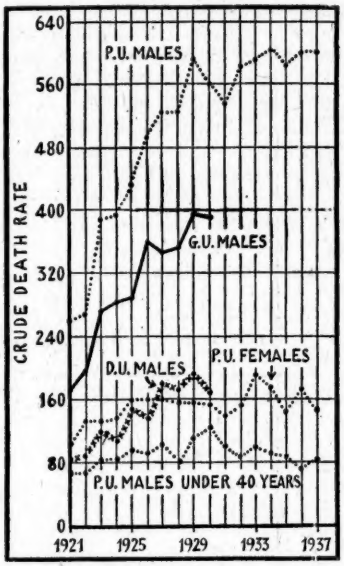

FIG. 5.—London (A.C.). Crude death rates over 40 years of age. Per million living in age and sex groups.

London and of the number of admissions, or of the H.A.R. for St. Thomas's Hospital, can be compared, they are in reasonable agreement. The trend of admissions to the hospital is in closer agreement with the death rates for London than with those for England as a whole.

Ratio of Gastric to Duodenal Ulcer

The ratio has changed considerably in the course of 25 years, and consequently ratios based on a long period of years will be misleading. The ratios of G.U. to D.U. for all admissions in the four-year periods are respectively 2.2, 1.4, 1.5, 2.2, and 2.5 to 1. For the period 1910–13 the ratio was dominated by the prevalence of G.U. in young women, and the subsequent fall in the rate was due to decrease in this group. The later rises are due mainly to increase in G.U. and fall in D.U. in males. The trend of the ratios differs so greatly for the two sexes that these should be considered separately (Table IV).

TABLE IV.—*Ratio of Gastric to Duodenal Ulcer*

	Males			Females			Total Admissions
	All Ages	Under 40 Years	Over 40 Years	All Ages	Under 40 Years	Over 40 Years	
1910–13	0·8	0·8	0·9	34	160	9·0	2·2
1922–25	1·0	0·8	1·1	6·5	8·0	6·0	1·4
1926–29	1·2	0·8	1·4	6·5	6·0	7·0	1·5
1930–33	1·9	1·6	2·0	5·4	5·7	5·3	2·2
1934–37	2·4	2·1	2·5	3·3	1·5	4·0	2·5
Total 1922–37	1·5	1·2	1·7	5·0	5·0	5·2	1·9

1922–37: Females, all ages: $\chi^2 = 9{\cdot}13$, $n = 3$, $P = 0{\cdot}03$. For males, all ages, P is infinitesimal.
Figure of gastric ulcer is recorded, duodenal ulcer being regarded as unity. For numbers see Table III.

The ratio for males also varies with the age, rising progressively with each decade (Table V); but this result is based on the whole period 1922–37, during which various changes have occurred, the sum of which must be accepted with caution.

For the period 1910–13, in addition to the prevalence of G.U. in young women, it is noticeable that D.U. was in excess of G.U. for males in both age groups. For males over 40 years of age G.U. was slightly in excess of D.U. in 1922, and, after several years of equality, permanently became greatly in excess in 1927. For males under 40 years G.U. first and finally became in excess in 1929. An appreciable excess of G.U. over D.U. in males is thus a comparatively recent development in admissions to St. Thomas's Hospital, and the excess is still increasing, the ratios for all ages in the four four-year periods 1922–37 being respectively 1, 1.2, 1.9, and 2.4 to 1. G.U. was gaining over D.U. before 1930 because it was increasing more rapidly, and after 1930 because it was stationary while D.U. was falling.

TABLE V.—*Age Distribution of Peptic Ulcers and Perforations, 1922–37*

Age Group	Males: Total Admissions		Males: Ratio G.U.:D.U.	Males: Perforations		Males: Perforations % of Admission		Females: Total Admissions	
	G.U.	D.U.		G.U.	D.U.	G.U.	D.U.	G.U.	D.U.
0–20	4	5	0·8	1	3	—	—	4	2
20–30	143	156	0·9	41	36	29	23	35	11
30–40	382	262	1·5	55	47	14·4	18	94	18
40–50	500	304	1·6	75	56	15	18	193	42
50–60	375	213	1·8	43	41	11·5	20	163	29
60–	176	85	2·1	25	22	14	26	120	20
All ages	1,580	1,025	1·5	240	205	15·2	20	609	122

Ratio of G.U. to D.U.: Figure for G.U. is recorded, D.U. being regarded as unity.

For females, G.U. has always been in excess of D.U., which is rare at any age, but the ratio has fallen from 34 to 1 in 1910–13 to 3.3 to 1 in 1933–6. The fall is principally due to the practical disappearance of G.U. under 40 years, but there may be a slight increase in D.U. Thus the ratio of G.U. to D.U. is rising for males and falling for females in both age groups. These changes are statistically significant.

Ratio of G.U. to D.U. in Private Practice

Physicians in the London area have been puzzled by the discrepancy between the ratios of G.U. and D.U. for private patients and hospital cases. Most physicians would agree that D.U. is considerably commoner than G.U. in consulting practice. There is a tendency to believe that private practice more correctly represents the ratio in the local population, and that for some reason hospital statistics are misleading. This view should not be lightly accepted. There are several factors which affect comparison between the two series.

1. Statistics of private patients are generally drawn from many years of practice, while the larger hospital statistics are usually from a few recent years. The statistics given here show how rapidly the relative incidence of G.U. in males has been rising recently among hospital patients in London.

2. Private patients are mainly drawn from a limited section of the community which falls largely into Social Class I (professional classes, etc.), while hospital patients are nearly all from Class III (skilled workers) to Class V (unskilled workers). The Registrar-General's Decennial Report, 1931, Part 2, gives the standardized mortality ratios for G.U. and D.U. for males of 20 to 65 years for the five social classes (Table VI). For Class I the rate for G.U. is

TABLE VI.—*Standardized Mortality Ratios, Gastric and Duodenal Ulcers*

	Males: Age 20–65 Years				Married Women: Age 35–65 Years
	1921–23		1930–32		1930–32
	G.U.	D.U.	G.U.	D.U.	G.U. and D.U.
Social class I	72	126	55	101	53
,, ,, II	87	109	76	106	98
,, ,, III	96	91	99	99	99
,, ,, IV	105	93	109	93	99
,, ,, V	127	113	127	107	118

From the Registrar-General's Decennial Report, 1931, Part 2.

55% of the expected rate, for Class III 99%, and for Class V 127%. On the other hand, for D.U. there is no appreciable difference between the rates for the different classes. If these results apply also to the living, then D.U. in proportion to G.U. will be nearly twice as high in Class I as in Class V. (It must be noted that the actual ratios of G.U. to D.U. cannot be obtained by comparing the standardized mortality ratios for G.U. and D.U.)

There are other factors which affect comparison of private and hospital patients, such as age and sex distribution, and the areas from which material is drawn. An urban population in England tends to have a higher incidence of G.U. than a rural

area, and hospital patients are, in general, urban residents, while private patients are drawn from wider areas. Hence the ratios of G.U. to D.U. in private practice and hospital patients are not necessarily comparable.

Sex Incidence

The sex incidence differs so greatly for G.U. and D.U. that these should be considered separately. For each ulcer the ratio has changed steadily between 1910 and 1937, but in opposite directions, and the ratio for the two ulcers combined—i.e., for peptic ulcer—is of little value (Table VII). The relative incidence of males has been rising for G.U. and falling for D.U. Both changes are statistically significant. Ratios based on a long period of years may be misleading, and the common statement that the sex incidence remains constant at 3 males to 1 female gives an erroneous impression of constancy of the ratio in the two types of ulcer.

TABLE VII.—*Ratio of Males to Females*

	Gastric Ulcer			Duodenal Ulcer			Peptic Ulcer
	All Ages	Under 40 Years	Over 40 Years	All Ages	Under 40 Years	Over 40 Years	Total Admissions
1910–13	0·6	0·3	1·5	23	61	15	1·2
1922–25	1·7	2	1·5	11	22	8	3
1926–29	2·5	3	2·2	14	23	11	4
1930–33	2·7	5	2·2	8	17	6	3·7
1934–37	3·3	7	2·7	4·5	5	4·3	3·6
Total 1922–37	2·6	3·9	2·2	8·4	14	7	3·6

1922–37: G.U. over 40 years: $\chi^2 = 11{\cdot}47$, n = 3, P = 0·01.
1922–37: D.U. all ages: $\chi^2 = 20{\cdot}30$, n = 3, P = less than 0·01.
Figure for males is recorded, females being regarded as unity. For numbers see Table III

In the period 1910–13 there was little difference between the two sexes for peptic ulcer as a whole. D.U. was practically unknown in females, but in G.U. under 40 years women predominated, and formed the largest of all groups. The excess of females in this group disappeared between 1913 and 1921. The previous preponderance of this group and its rapid fall have influenced sex ratios for the last 50 years, as also the ratios for G.U. and D.U. While this group is now very small, the fall in admissions and in the hospital admission rates can be recognized up to the last period, so presumably a few cases of the same type are still occurring. Since the disappearance of this group, males have been heavily in excess in all groups, especially at younger ages. The rarity of D.U. in women is noticeable. For D.U. under 40 years only 31 women were admitted in 1922–37, in contrast to 423 males.

Age Incidence

In the period 1922–37 admissions were highest in the decade 40–50 years, both for G.U. and D.U. and for both sexes (Table V). For females the proportion of admissions below 40 years is now less than in males, and the average age is higher (see Table II). The average age of admissions for G.U. has been increasing in both sexes, but in males it has been mainly due to increasing numbers over 40 years and in females to decreasing numbers under 40 years. General estimates of age incidence based on long periods are of little value, for age incidences have been influenced by two factors which have been rapidly changing during the period under consideration. The most important is the practical extinction of the formerly predominant group of G.U. in young women. In 1910–13 and probably for some years subsequently the size of this group caused the mean age for peptic ulcer to be much lower in women than in men. In previous decades the difference was even greater. The disappearance of this group resulted in peptic ulcer in a short time becoming very rare in young women, causing a rapid rise in the mean age considerably above that for males. The rapid increase in G.U. in males over 40 years, and to a lesser degree in D.U., between 1920–30 raised the mean age for males, but it still remained below that for women.

Incidence of Perforations

In the period 1922-37 admissions for perforated peptic ulcer numbered 478. There were 263 perforations among 2,189 admissions for G.U., forming 12.1%, and 215 among 1,147 admissions for D.U., forming 19.1%. The difference between these percentages is statistically significant (7 ± 1.31). We have no reason to believe that there was selection at any point in favour of perforated D.U. or, conversely, in favour of non-perforated G.U. On the data here available the difference may be held to indicate that D.U. has a greater liability to perforate than G.U. This is in accordance with the general belief of clinicians, but is a provisional suggestion on the present data. The differences between the percentages of perforations to admissions for G.U. and D.U. are significant separately for males (4.8 ± 1.54) and for females (4.4 ± 2.06).

Among males G.U. perforations numbered 240 and D.U. 205, and among females G.U. numbered 23 and D.U. 10. Males constituted 91% of admissions for perforated G.U. and 95% for D.U. This high proportion in males is not wholly accounted for by the greater incidence of peptic ulcer. Perforations form 17% of male admissions and only 4.5% of female. The difference in the percentages between the sexes is statistically significant both for G.U. (11.4 ± 1.55) and for D.U. (11.8 ± 3.74). There is no reason to believe that there was any selection which would influence these results. The difference may be held to indicate that, given an ulcer is present—either G.U. or D.U.—the liability to perforate is greater in a male than in a female.

TABLE VIII.—*Incidence and Mortality of Perforations*

	Period	Under 40 Years				Over 40 Years				To a Perforation
		Perforations		Deaths		Perforation		Deaths		
		No.	% Cases	No.	% Per'n.	No.	% Cases	No.	% Perfns.	
		Males								
Gastric ulcer	1910–13	10	21	3	30	17	25	8	47	27
	1922–25	17	19	1		28	20	10		45
	1926–29	19	17	—		40	15·6	15		59
	1930–33	34	20	6		39	11·5	12		73
	1934–37	27	18	3		36	11·2	12		63
	Total 1922–37	97	18·7	10	10	143	13·5	49	34·3	240
Duodenal ulcer	1910–13	10	16	5	50	43	56	27	63	53
	1922–25	23	20	4		21	17	5		44
	1926–29	27	19	3		46	25	4		73
	1930–33	18	18	7		22	13	7		40
	1934–37	18	25	2		30	23	7		48
	Total 1922–37	86	20·1	16	18·6	119	20	23	19·3	205
		Females								
Gastric ulcer	1910–13	19	12	6	31	7	16	6	90	26
	1922–25	1		—		3		1		4
	1926–29	—		—		4		1		4
	1930–33	2		—		5		2		7
	1934–37	1		—		7		5		8
	Total 1922–37	4	3	—	—	19	4	9	47	23
Duodenal ulcer	1910–13	—		—		1		1		1
	1922–25	—		—		1		—		1
	1926–29	—		—		—		—		—
	1930–33	2		1		2		1		4
	1934–37	2		—		3		1		5
	Total 1922–37	4	13	1			7	2		10

For number of cases (admissions of ulcers see Table II.

The highest number of perforations in males was in the age group 40–50 years, both for G.U. and for D.U. (Table V). For females the numbers are too small for subdivision, but perforations are very rare under 40 years.

The proportion of perforations to admissions for males is the same in the two age groups for D.U. For G.U. it is higher under 40 years than over 40 years, and the difference is significant (5.2 ± 1.92). Over 40 years the proportion has apparently been falling. The higher proportion of perforations to admissions under 40 years for G.U. is entirely due to the decade 20–30 years, which is nearly twice as high as any of the succeeding decades, between which the difference is not significant. Nor is the difference significant between any

the decades for D.U. This uniformity for D.U. throughout life is consistent with other evidences given in this communication. So also is the distinction of G.U. into two age groups, but the indication here suggests that the dividing line is nearer 30 than 40 years.

There were 98 deaths among 445 male perforations, the case mortality at all ages being 22%. For G.U. the rate is 24.6% and for D.U. 19%. For D.U. there is no difference in the case mortality in the age groups. On the other hand, for G.U. there is a marked difference, being 34% in the older group and 10% in the younger, and the difference is statistically significant. A higher case mortality for G.U. perforations than for D.U. is well recognized, and also a rising case mortality with increasing age. The absence of increase for D.U. in the later age group is unexpected, and more data are desirable.

There were 12 deaths in 33 female perforations, only one death occurring under the age of 40 in the 16 years.

For the period 1910–13 perforation has a high case mortality, as would be expected. While statistics at this period must be accepted with caution, the number of perforations from G.U. in women under 40 years may be accepted as substantially correct, since this was a well-recognized lesion. In this group, among 160 admissions, there were 19 perforations with 6 deaths. This is the highest number of perforations in any group of G.U., but they form only 12% of admissions—a proportion lower than any other group. The view often accepted that this type of ulcer had a special tendency to perforate, with a high case mortality, is not supported by these figures. The differences between the groups are not significant. The large number of perforations from D.U. in males over 40 years in this period is noticeable, and the allocation for D.U. apparently is supported by the cases in which necropsies were performed. If this series is reliable a rapid change in the incidence of perforation of D.U. took place between 1913 and 1922 or in the type of ulcer, but although the change is statistically significant, further data are necessary.

Recurrence of Perforation.—For the period 1933–6, of the 392 admissions for G.U. in males, excluding admissions for perforation, 16 had previously perforated, and of 170 similar admissions for D.U. 9 had done so. Of the 70 admissions for perforated G.U. 3 had previously perforated, and of the 38 admissions for perforated D.U. 2 had perforated, none of these being fatal. The proportion of these earlier perforations is about the same in the two groups. No woman had previously perforated.

Duration of Symptoms before Admission

The duration of symptoms in males before admittance has been calculated from admissions to St. Thomas's Hospital for 1933–6 and, in order to obtain additional material, from a number of admissions to Army hospitals in 1941 (Table IX).

TABLE IX.—*Duration of Symptoms Previous to Admission (Males)*

	Age Groups (Years)				
	20–30	30–40	40–50	50–60	Over 60
Gastric ulcer:					
Under 4 years	56 (30)	46 (61	47 (56)	41 (39)	50 (28)
4–9 years	30 (20)	28 (37)	30 (37	31 (30)	17 (9)
10 years and over ..	10 (7)	26 (34)	23 (27)	38 (27)	33 (18)
Mean duration (years) ..	4½	6	6	6	6
Duodenal ulcer:					
Under 4 years	48 (124)	40 (112)	38 (45)	33 (14)	20 (3)
4–9 years	43 (112)	35 (110)	23 (27)	29 (12)	40 (6)
10 years and over ..	9 (25)	25 (73)	39 (46)	38 (16)	40 (6)
Mean duration (years) ..	4	6	7	7	8

Distribution of duration recorded in percentages for each age group. Actual numbers in brackets. Admissions for perforated ulcers are not included.

For G.U. the duration before admission does not increase after the age of 30. There is a material proportion with a comparatively recent onset even in the later age groups. For D.U. the previous duration tends to increase with age, and there is a higher proportion of lengthy durations and a progressive decrease in the proportion of short histories. It would appear that a high proportion of cases of G.U. met with in the later age decades have started after middle life and that the common course for younger patients is to recover either completely or sufficiently not to require subsequent hospital treatment. This is undoubtedly true for the type of G.U. formerly prevalent in young women.

Deaths and Case Mortality

The causes of death will not be considered here, other than the above references to perforation.

In the period 1922–37 there were 333 deaths in 3,336 admissions—a case mortality of 10% (Table III). The case-mortality rate varies greatly with the age, and to some extent with the type of ulcer and the sex. In the age groups under 40 years the rate is about 5% in each group, while over 40 years it is 12.3%. In women under 40 years only 9 deaths occurred among 164 cases. In the age groups over 40 years the case-mortality rate is higher for males (13.3%) than females (9.5%), and for G.U. (12.8%) than D.U. (11.2%). For males the rate is 14.1% for G.U. and 11.8 for D.U. The difference between males and females is significant (3.8 ± 1.59); the other two are not significant.

Comparing four-year periods, the case-mortality rate from G.U. in males over 40 years has fallen steadily from 19.4% in 1922–5 to 11.6% in 1934–7. The difference between 19.4 and 11.6 is significant (7.8 ± 3.5), but the differences between the four columns are not statistically significant to the χ^2 test. ($\chi^2 = 5.21$, $n = 3$, $P = 0.15$.) This, however, takes no regard for the order of the numbers in a progressive fall. This can be corrected by the formula $\frac{P}{|n+1}$, where n is the number of columns as counted in the χ^2 test. This reduces the value of P from 0.15 to 0.006, which is significant. Hence it appears that the progressive fall is significant. Various reasons could be suggested for this, such as improved surgical and medical treatment. For D.U. there has been no fall in case mortality. The case-mortality rate for 1910–13 is considerably higher than for later periods. The rate for G.U. in females under 40 years is distinctly lower than for other groups, and supports the comparative mildness of this type of ulcer.

Discussion

Any attempt to follow the trend of peptic ulcer must consider G.U. and D.U. separately and also subdivisions for sex and age. The present communication solely applies to the London area. Even with this proviso, admissions to a single teaching hospital are not necessarily a random sample of the area. Until further data are available certain deductions are only provisional. Nevertheless the broader outlines here presented of the picture and of the trends may be useful. In certain groups the trends of the hospital admissions can be compared with the trends of the death rates for London and for England and are not inconsistent.

Two special factors influence the trend of peptic ulcer during the period of 1910–37. One is the rapid decrease of gastric ulcer in young women in the earlier years of the period, and the other is the rapid increase of gastric ulcer in older men between 1922 or 1925 and 1930.

The fall in the incidence of gastric ulcer in young women is confirmed by the trend of death rates for all parts of Britain. The decrease of perforations in this group has long been clinically recognized (Jennings, 1940), but it is evident from the trend of hospital admissions that such decrease is the result of a fall in the incidence of this ulcer and not due to a change in its liability to perforate. The fall for admissions, perforations, and death rates was largely completed by 1922, but still continued until 1937, and it greatly influences all long-period ratios of G.U. to D.U., males to females, and age incidences. This was the largest group of peptic ulcer until about 1914, but its fall probably began about 1900, its incidence in the nineteenth century having been even greater. The disappearance of this group establishes that some set of removable external aetiological factors can rule the incidence of one type of ulcer in one sex at one age period, and if this is true for one group of peptic ulcer it can be true for others. A further question which may be referred to here is the fate of this group of young women. They did not die, since the case mortality is low. Nor did the ulcers become chronic, for

in the period 1910–13 there were 160 admissions under 40 years and only 45 over 40 years, and the young cases were not readmitted for recurrences. The only remaining substantial possibility is that the ulcers healed and did not recur.

A rapid rise in admissions for G.U. in males over 40 years started about 1925 and ceased about 1930, when the curve flattened out. A rapid rise in death rates in this group for all parts of England but greatest in London began about 1922 and ended about 1930. This group, both for admissions to St. Thomas's Hospital and for death rates for London, and also for death rates for England, had then outstripped all other groups of peptic ulcer.

Admissions for G.U. in males under 40 years also rose rapidly between 1925 and 1930, but there are certain differences between the two age groups. The rise is less marked. There is a wide interval between the curves for these age groups. The duration of symptoms previous to admission is comparatively constant throughout the two age groups, and suggests that the older group is not due materially to continuation of symptoms arising in the younger ages, but to new formations of ulcer. This difference between the two age groups for G.U. in males is even more marked in females, in whom the trends are clearly completely independent.

The trends of admissions for D.U. differ from those for G.U. Admissions in males are close together in the two age groups. There is a progressive increase in the duration of symptoms in the age groups, and an increasing proportion of cases with lengthy histories. Admissions for D.U. in males rose irregularly to a maximum about 1928–30. Subsequently there was a fall until the hospital admission rate finally was below that for 1910–13. Admissions commonly exceeded those for G.U. until 1926. The curve for G.U. over 40 years then finally passed the corresponding group and rose far above it. The curve for G.U. under 40 years passed D.U. under 40 years in 1929.

If the trends of admissions to St. Thomas's Hospital are a reflex of trends of morbidity in the population drained they suggest that the incidence of G.U. in males over 40 in the London area rose rapidly about 1925 and suddenly ceased to rise about 1930, though the maximum rate was maintained, while the incidence of D.U. in males rose moderately during a shorter period, but subsequently fell again to the level of 1910–13. Such trends and the recent great and increasing preponderance of G.U. over D.U. may be unexpected, but they are consistent with the trends of the death rates.

For females the only considerable group of peptic ulcer in recent years is gastric ulcer over 40 years of age. Admissions show a steady but moderate increase to a maximum in 1930, with a subsequent fall. This trend agrees with death rates for the London area, but neither England as a whole nor Scotland shows any rise in death rates. All other groups of peptic ulcer are now rare in women. The incidence under 40 years is low, and the mean age, which before 1913 was below that for males, is now higher.

The proportion of cases admitted for perforations varies in different groups. It is suggested that in the absence of evidence of selection a higher proportion indicates a greater liability to perforate. Differences referred to here are all statistically significant. The proportion is higher for D.U. than for G.U. in both age groups. For D.U. the proportion is the same in the two age groups, but for G.U. it is higher under 40 years than over 40 years. The case-mortality rate for all ages is higher for G.U. than for D.U. This is due to the high case mortality for G.U. over 40 years, which is three times greater than in G.U. under 40 years. The case-mortality rate for D.U. in this series is the same in both age groups. These differences between perforations in the two age groups for G.U., together with other differences referred to above, will be held to indicate the presence of different aetiological factors at different ages. For D.U. there are no such differences.

The proportion of cases admitted for perforation is lower in females than in males for both G.U. and D.U. Perforations in women are now rare. Thus it appears that in women not only is the development of ulcer now comparatively rare but, when present, an ulcer has a low liability to perforation. Possibly the factors which determine formation of an ulcer and perforation are not necessarily identical.

It is generally agreed that the aetiological factors of G.U. and of D.U. are different. Clinical evidence for this is accumulating. There are differences in the trends of the death rates for the two types in England and between England and Scotland, and differences in the standardized mortality ratios for the five social classes. Various differences in the two types for admissions, perforations, and case mortalities are recorded here. For G.U. there are also differences between the age groups. It may be suggested that there is more than one group of aetiological factors producing G.U., operating commonly at different ages and differently in the two sexes. For D.U. there are no such differences between the age groups, which suggests that the same set of factors operates at all ages but with widely different effects on males and females.

Psychoneurotic stimuli often appear to be the exciting cause of the development of D.U. and of the incident of perforation. As a sole factor this theory does not explain the rarity of D.U. in women and the even greater rarity of perforation. The severest air raids scarcely shook the curve of perforation in women, but they sent the curve for men sky-high. Nor is it consistent with the practical absence of D.U. before 1900 and its subsequent trends. Some independent predisposing cause is indicated. Psychoneurotic stimuli may pull the trigger, but some other hand has previously loaded the gun.

The external factors concerned in the development of gastric and duodenal ulcer cannot even be adumbrated here, but a study of the changing face of peptic ulcer and of its different aspects in various geographical areas may assist in their elucidation.

Conclusions

1. Admissions for G.U. in males over 40 years increased rapidly between 1925 and 1930, when the rise ceased but the maximum rate was maintained. Admissions under 40 years had a somewhat similar trend, but with much lower numbers. There are certain differences between the features of the two age groups.

2. Admissions for D.U. in males rose irregularly and moderately after the war until 1929–30 and then fell again to the level of 1910–13. Admissions in the two age groups under and over 40 years are similar in number and trends.

3. Admissions for G.U. in males have been in excess of those for D.U. since 1927, previously having been less, and the excess has been rapidly increasing. Under 40 years, G.U. first became in excess of D.U. in 1929.

4. The trends of admissions for G.U. in females are completely independent in the age groups under and over 40 years.

5. Admissions for G.U. in females over 40 years increased moderately until 1929–30, when the rise ceased.

6. Admissions for G.U. in females under 40 years formed the largest group of G.U. in 1910–13, but fell rapidly, and the incidence is now very low.

7. Admissions for women are very low for D.U. at all ages.

8. The trends of hospital admissions and of death rates for London (Administrative County) are reasonably in agreement.

9. The ratio of G.U. to D.U. is rising for males and falling for females.

10. The ratio of males to females is rising for G.U. and falling for D.U.

11. The ratios of G.U. to D.U. in hospital admissions and in private practice are not comparable.

12. The liability of an ulcer to perforate is greater in D.U. than in G.U., and greater in males than in females for both G.U. and D.U. For G.U. the liability is greater under 40 than over 40 years; for D.U. it is the same in both age groups.

13. The case-mortality rate of perforated G.U. is considerably higher over 40 than under 40 years. For D.U. it is the same in both age groups.

14. The factors stimulating the formation of peptic ulcer are different for G.U. and D.U. For G.U. they are not the same for the age groups under and over 40 years. For D.U. they are similar for both age groups, but have little influence on women.

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BLACKWATER FEVER IN WEST AFRICA

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For a period of 20 months we were stationed at a general hospital in one of the West African colonies. This hospital was situated in well-drained uplands, its precincts being practically free of the anopheline mosquito, but within two miles the hills descended into large areas of swampy ground where subtertian malaria was rife. Most of the cases of malaria and all the cases of blackwater fever treated in this hospital came from these areas. During the 20-month period 2,355 cases of subtertian malaria in British and Allied personnel were admitted, the majority being from the British Army. In the same interval 7 cases of blackwater fever were admitted. There were no deaths from either disease. These cases of blackwater fever are presented because it is felt that this disease is of special importance while British and Allied troops are living and fighting in countries in which it occurs, and because it is not very rare for individuals to develop it after return to the United Kingdom from the Tropics. Such a case, rapidly fatal, was seen by one of us. An account of the clinical features and treatment of subtertian malaria in British troops in West Africa has already been given by Hughes and Bomford (1944).

Blackwater fever is a disease characterized by a sudden intravascular haemolysis, with the liberation of oxyhaemoglobin in the plasma. From this, methaemoglobin and methaemalbumin ("pseudo-methaemoglobin") are formed. Oxyhaemoglobin and methaemoglobin are excreted in the urine together with acid haematin, these blood pigments imparting the typical porter or stout colour to the urine. Methaemoglobin, with its much larger molecule, is never excreted. The two most important characteristics of the disease—namely, the haemolysis and the anuria—will be separately discussed.

Relationship to Malaria

Blackwater fever is now universally regarded as a complication of malaria, especially of the subtertian form. Stephens (1937) was able to collect only 7 cases in which it was associated with benign tertian or quartan fever. A fatal case following *P. ovale* infection is quoted by Fairley (1939). It is met with in those countries in which subtertian malaria is hyperendemic, and, as it principally affects the white races in such countries, has long been the dread of Europeans on the West African coast, being in part responsible for the unhealthy and somewhat sinister reputation enjoyed by that part of the continent. It is interesting to note that in the 20-month period only 168 African soldiers were admitted with malaria, although the total African admissions for all diseases far outnumbered the British. The West African, if he survives malaria in infancy and childhood, becomes relatively immune to it. We heard of no case of blackwater fever in a native soldier, but there were several among the Syrian settlers in the colony. It is generally stated that the seasonal incidence of blackwater fever closely follows that of subtertian malaria. This has certainly been our experience in this small series. In this colony malaria was endemic throughout the year, but it reached its peak in July and August—i.e., at the height of the rains—and five of our cases developed blackwater fever in July, August, or September.

All our cases had had previous attacks of malaria (Table I). Case VII had had only one recognized attack, but had taken no suppressive quinine, and there was reason to believe he had been very careless over antimalarial precautions in general. His malaria had been treated at another hospital with 30 gr. of quinine daily for 2 days, 0.3 g. of mepacrine daily for 5 days, and 0.03 g. of pamaquin daily for 4 days. The haemoglobinuria developed on the day after completion of the above treatment. Case III had been treated in our hospital for the sixth attack of malaria with 10 gr. of quinine and 0.3 g. of mepacrine daily for 7 days, followed by 0.03 g. of pamaquin daily for 3 days. This patient was perfectly well when discharged, but he got wet through on the way back to his unit and was readmitted with blackwater fever the same evening. Three patients developed the disease during actual treatment for malaria in our hospital. In all of them the urine had been normal before the onset of the haemoglobinuria and had been kept alkaline. Thus, Case I developed it on the second day of treatment after a total of 60 gr. of quinine, Case IV also on the second day after 30 gr., and Case V on the seventh day after 150 gr. of quinine and an intramuscular injection of 0.2 g. of mepacrine hydrochloride. The latter was given as the temperature, which had almost settled, rose suddenly to 104° F., this rise probably corresponding to the onset of the haemolytic process. Haemoglobinuria followed two and a half hours after the injection. This patient was also receiving treatment for amoebic dysentery. These three cases, and also Case III, had not been thoroughly treated for previous attacks of malaria. We are of the opinion that the fact that blackwater fever may arise during what appears to be an ordinary uncomplicated attack of malaria has not been sufficiently stressed; there has been too great a tendency to regard it as developing only in subjects with malarial cachexia who have been resident in the Tropics a long time. Three of our cases had been in West Africa for less than one year. We were unable to recognize a "pre-blackwater fever" stage in any of those who developed the disease in hospital. Conversely, we saw many malarious patients in whom the cachexia and history of previous attacks led us to believe they were likely candidates for blackwater fever but who did not, in fact, develop it.

Clinical Features

A full account of these may be found in standard works. The most important biochemical and other details of our cases are summarized in Tables I and II.

TABLE I

Case	Age	Residence in W. Africa	Previous Attacks of Malaria	Suppressive Quinine
I	25	20 months	2	Regular
II	20	8 ,,	2	,,
III	27	16 ,,	6	,,
IV	31	11 ,,	7	,,
V	23	19 ,,	5	Irregular
VI	36	18 ,,	5	Regular
VII	20	6 ,,	1	None

A rigor, said to be typical of the onset, occurred at the beginning of the illness in one patient only. Of the cases which developed blackwater fever during treatment for malaria, Case V, as already stated, showed a sudden rise of temperature with the onset of haemoglobinuria. In Cases II and IV the temperature also rose to 102° and 104° F. respectively. These three patients also showed a very abrupt rise in the pulse rate. Such an increase in the rate of the characteristically slow pulse of malaria is of importance, and should lead to an immediate examination of the urine for haemoglobin. Except in Case I, a rapid pulse of 100–120, of poor volume, was a constant feature in all the patients. The duration of the fever corresponded to the acuter stages of the disease, except in Cases III and IV, in which a fever of 99–99.5° F. was prolonged well into convalescence—the so-called "post-haemoglobinuric fever." Only Case I was afebrile throughout.

The jaundice, together with anaemia and cachexia, imparted a characteristic appearance which sun-tan rendered all the more striking. The general impression obtained was of great weakness; these men were disinclined to move, and a constant complaint was of feeling "very ill." In no instance was the liver palpable, although tenderness over it was elicited in three instances. In Cases II, IV, and VII the blood pressure was low during the first few days, readings of 96/40, 92/45, and 94/90 respectively being obtained. In Case VI the blood pressure, which was 108/66 on the second day of the illness, rose at the same time as the blood urea to 150/80 on the ninth day. A leucocytosis of 25,000 and 30,000 occurred on the first and fourth days respectively in Cases V and VII. Cases VI and VII developed a reticulocytosis of 5% and 9% respectively during recovery from the anaemia. Convalescence was prolonged, the average length of stay in hospital being 45 days. All patients were invalided to the United Kingdom with a recommendation that they should not again be sent to a malarious country.

The mortality varies from 25 to 50%, according to different authors. Findlay (personal communication, 1944) states that the mortality rate for the whole West African Command over a period of three years was 28.8%. We are indebted to him for permission to give this figure.

Haemolysis

In subtertian malaria a haemolytic anaemia occurs, but the reticulo-endothelial system is capable of dealing with the liberated haemoglobin, transforming it into haemosiderin and bilirubin, and only in the severer cases can free haemoglobin be demonstrated in the plasma (Stitt, 1942). In blackwater fever, however, the haemolysis occurs with such explosive suddenness that the renal threshold for haemoglobin is exceeded and this pigment appears in the urine. The cause of this sudden haemolysis is still unknown. The mystery is further increased when it is considered that severe cases of subtertian malaria, in which there is a profound anaemia and in which a large percentage of the circulating red cells may be parasitized, are quite common; and yet this is not the type of case which develops blackwater fever. Preceding and during the disease parasites are scanty in the peripheral circulation, often entirely disappearing early in the illness.

For nearly a hundred years quinine has been considered a precipitating factor, and recently Cust (1943), Frewen (1943), and others have reported cases arising during quinine therapy, while Foy and Kondi (1938) state that the relation of the last dose of quinine to the onset of blackwater fever is so significant as to be more than casual. Fairley and Murgatroyd (1940) describe a patient with blackwater fever in whom four recurrent attacks of haemoglobinuria occurred, each precipitated by quinine. The relationship of the haemoglobinuria to the taking of quinine has already been mentioned in our cases. Yet the disease has occurred during treatment with mepacrine or pamaquin and in patients who have never received any quinine at all. In Case I haemoglobinuria returned after mepacrine treatment had inadvertently been started on the second day of the illness and disappeared as soon as the drug was discontinued. The part played by quinine in the aetiology is, of course, obscured by the fact that most patients with malaria are treated with this drug. In this connexion the statement by Findlay (personal communication, 1944), that the incidence of blackwater fever in the West African Command has considerably diminished since the substitution of mepacrine for quinine as a suppressive and as the therapeutic drug for uncomplicated malaria, is of great significance.

Other theories may be briefly discussed. Smith and Evans (1943) attempted to prove that the haemolysis is due to increased fragility of the red cells consequent upon lowering of the *p*H of the blood, but apparently made no actual observations in blackwater fever. They based their conclusions upon *in vitro* experiments with red cells suspended in saline buffered to different *p*H levels. Of more significance is the work of Maegraith, Findlay, and Martin (1943), who showed that normal human serum inhibited the haemolytic action of animal tissue upon homologous red cells. This antihaemolytic effect was reduced in sera from cases of blackwater fever, especially during haemolytic crises, suggesting that the haemolysis is due to a lack of an antilytic substance rather than to the presence of a lysin. This would appear to be a promising line of investigation. Fernán-Núñez (1936) thinks blackwater fever is an allergic reaction to the malaria parasite protein, and claims that persons liable to the disease show a positive reaction to the intradermal injection of non-infective suspensions of *P. falciparum*.

Cold seems to be a precipitating cause (Case III). There is here an analogy with paroxysmal haemoglobinuria, but in blackwater fever the Donath-Landsteiner reaction is negative.

TABLE II.—*Details of Cases*

Case	Parasites in Blood	Red Cell Count and Hb %	Urine			Blood Urea Mg. per 100 c.cm.	Blood Transfusions	Intravenous Fluids	Remarks
			Hb Pig.	Alb.	Casts				
I	Scanty (1)	4,140,000 Hb 82 (4) 5,060,000 Hb 100 (8)	+ (1–2)	+ (1–2)	+ (1)	95 (4) 70 (7) 27 (13)	None	None	Mild case. No jaundice or vomiting
II	Absent	3,670,000 Hb 72 (2) 3,080,000 Hb 56 (4) 3,720,000 Hb 55 (6)	+ (1–2)	+ (1)	None	25 (3) 20 (4)	None	Sod. bic. soln. 30 oz.; N. saline 20 oz.	Moderately severe case. Slight jaundice; no vomiting
III	Absent	4,750,000 Hb 90 (2) 3,150,000 Hb 53 (4) 1,320,000 Hb 30 (9) 2,200,000 Hb 36 (11) 4,540,000 Hb 72 (29)	+ (1–5)	+ (1–8)	+ (4–11)	25 (2) 30 (5)	1 pint* (4) 12 oz.* (5) 15 c.cm.* (9) 1 pint (10)	Plasma 14 oz.; sod. bic. soln. 5 pints; glucose-sal. 6 pints	Severe case. Jaundice; vomiting; spleen palpable; loin pains
IV	Absent	4,210,000 Hb 80 (1) 3,280,000 Hb 60 (3) 3,900,000 Hb 60 (6)	+ (1–3)	+ (1–3)	+ (1–2)	45 (2) 30 (5)	None	Sod. bic. soln. 60 oz.; glucose-saline 20 oz.	Moderately severe case. Slight jaundice; vomiting; loin pains
V	Absent	3,200,000 Hb 63 (1) 3,140,000 Hb 62 (3)	+ (1–3)	+ (1–3)	None	37 (2) 30 (6)	None	Sod. bic. soln. 40 oz.; plasma 20 oz.	Moderately severe case. Slight jaundice; vomiting; spleen palpable
VI	Scanty (2) (3)	3,820,000 Hb 80 (1) 930,000 Hb 18 (5) 800,000 Hb 20 (7) 1,600,000 Hb 43 (10) 2,500,000 Hb 56 (35)	+ (1–3)	+ (1–15)	+ (1–13)	45 (3) 135 (6) 185 (11) 30 (35)	20 oz.* (5) 20 oz. (7) 40 oz. (8) 12 oz.* (11)	Sod. bic. soln. 67 oz.; glucose-sal. 40 oz.; sod. lact. soln. 40 c.cm.	Very severe case. Marked jaundice; severe vomiting; persistent hiccup; anuria 6th–7th day lasting 22 hours
VII	Absent	1,050,000 Hb 28 (2) 2,100,000 Hb 50 (4) 2,900,000 Hb 50 (7) 4,000,000 Hb 77 (15)	+ (1–4)	+ (1–7)	+ (4–5)	40 (3) 26 (5)	20 oz. (2) 20 oz. (3)	Sod. bic. soln. 60 oz.; glucose-saline 8 oz.	Severe case. Jaundice; vomiting; loin pains

Figures in brackets = days of disease. * Transfusion reaction.

The Anuria

Amongst other lesions the kidneys show blood-pigment casts in the tubules that are generally thought to be composed of acid haematin. Yorke and Nauss (1911) were able to produce renal obstruction by injection of haemoglobin into animals provided they were kept on a dry diet. They considered the obstruction was due to precipitation of acid haematin in the tubules from a concentrated urine. Baker and Dodds (1925), from similar experiments, considered that whether obstruction developed or not depended on the reaction of the urine. Obstruction occurred if this was acid but not if alkaline. Treatment of blackwater fever with alkalis, in an attempt to prevent anuria, became almost universal as a result of these experiments. Foy *et al.* (1943), in a review of the problem, point out that anuria in blackwater fever may develop in patients who have had a small haemolysis and who pass alkaline urine and, conversely, may not occur after a large haemolysis when the urine is acid. They also state that anuria is no less common since the introduction of alkali treatment. Maegraith and Havard (1944) share this view and emphasize the dangers of indiscriminate alkali therapy. Bywaters and Dible (1942, 1943), however, state that the renal lesions in cases of mismatched blood transfusion, crush syndrome, paralytic myohaemoglobinuria, and blackwater fever are very similar. In all these conditions pigment casts occur in the tubules, and although these observers do not consider they are the chief cause of the anuria, their cases of crush syndrome apparently

benefited by alkali therapy. In addition to the pigment casts there is a catarrh of the whole nephron, falling with especial severity on the ascending loop of Henle and the second convoluted tubule. They point out that it is in these portions of the tubules that acidification of the urine probably occurs, and that the selective damage to these structures which can be produced by the injection of uric acid and acid sodium phosphate into animals has been attributed to this. They consider that the anuria in the above conditions is chiefly due to reabsorption of glomerular filtrate into the blood stream through damaged tubules. Maegraith and Havard (1944) state that the greatest damage in blackwater fever is in the distal convoluted tubule. As in blackwater fever an acidosis is usually present, the urine is highly acid, and the alkali reserve is lowered, there would appear to be a good argument in favour of alkali treatment. Those who state that it is of little value do not indicate whether this is still true if it is used early in the disease. We consider it should be used as early as possible—in fact, the urine of all our cases of malaria was kept alkaline as a routine. Thus Cases II, IV, and V had alkaline urine before the onset of the haemoglobinuria. In only Case VI did anuria develop, and then for a relatively short period. With care there is little danger of alkalosis, but alkalis should be stopped or be used sparingly if anuria or oliguria occurs, for there is then a danger of alkalosis even if the urine is still acid.

It should be emphasized that dehydration from excessive vomiting and sweating is probably an important factor in the production of anuria and oliguria in many cases. In Case VI, for instance, vomiting was unusually prolonged and severe. Loss of chloride in vomitus and sweat will, moreover, augment the danger of alkalosis from indiscriminate alkali therapy and will also increase the tendency to nitrogen retention. We thus consider that an ample fluid intake by oral and intravenous routes is just as important as alkali therapy, and, in addition to alkaline solutions, we used glucose-saline or normal saline to replace chloride loss (Table II). In all our patients save Case VI urinary excretion was kept abundant throughout the course of the illness by these means.

Treatment

The general treatment consists largely in skilled nursing, which in no other disease is of greater importance. The patient is often in a condition resembling shock, and death from circulatory failure is therefore a danger. Complete rest on a low pillow is necessary and the patient is forbidden to sit up or feed himself. In West Africa, cases diagnosed in units, unless close to the hospital, were not moved, but were treated in their own lines by a mobile medical team based on the hospital. A full description has been given of these teams by Findlay (1943). Large quantities of water and fruit juice with glucose should be given, and all other food except small amounts of milk or junket withheld until acute symptoms have subsided. The daily fluid intake by the mouth should be at least 8 pints. Proteins should be restricted until well into convalescence. Fluid intake and output charts should be kept. Individual symptoms such as vomiting, hiccup, and hyperpyrexia must be treated as they arise. In Case VI all attempts to arrest the distressing hiccup, including cocaine by the mouth, failed. For severe loin pains, atropine 1/200 gr. was of value in Case VII. Oxygen, nikethamide (coramine), adrenaline, and bed blocks must be available for circulatory failure. It is useful to keep successive samples of urine in test-tubes so that the reaction and the degree of pigmentation can be easily observed, while a red cell count and a haemoglobin estimation should be undertaken daily.

Blood Transfusion

This is necessary if a dangerous degree of anaemia develops after massive haemolysis, but considerable judgment must be exercised in individual cases in deciding when to transfuse. Blood should never be given if oliguria is present. It is stated that in blackwater fever the donor's cells are liable to haemolysis as well as those of the recipient. Consequently, cross-grouping is always necessary. In spite of this precaution two of our cases had severe reactions (Table II). In Case III attempts at transfusion were persisted in; the fourth, which was uneventful, undoubtedly saved the patient's life. This transfusion was given very slowly, a pint being administered in 4½ hours. In Case VI the first transfusion was continued in spite of a rigor, as the patient was moribund. The anuria which followed this was possibly precipitated by it. The absence of reactions and the non-appearance of haemoglobinuria during subsequent transfusions in this patient suggest that the failure of these to raise the red cell count was at least as much due to the normal haemolytic process of the disease as to haemolysis induced by the transfused blood. In Case VII we transfused early on the second day of the disease while haemoglobinuria was still present. One pint was given at the rate of 8 drops to the minute, being preceded and followed by one pint of 2% sodium bicarbonate solution. A similar procedure was carried out the next day, 10 oz. of blood being followed by one pint of sodium bicarbonate solution and then by a further 10 oz. of blood. In this patient, a rise of one million red cells per c.mm. was obtained in 48 hours in spite of continued haemolysis, and no reactions were observed. This method would appear worthy of further trial.

Prevention of Anuria

On diagnosis an intravenous drip of 2% sodium bicarbonate was set up immediately, 1 to 2 pints being administered fairly slowly—i.e., 1 drop every 2 seconds. A rate of three pints in 24 hours was never exceeded, but recourse was had to intravenous saline, saline-glucose, or plasma to keep the excretion of urine abundant and to replace chloride loss. At the same time, sodium bicarbonate 1 dr. four-hourly was given by mouth and as much bland fluid as the patient could be made to take. In the Tropics a urinary output of from one-half to two-thirds of the intake appears to be satisfactory in blackwater fever. In Case VI the injection of 20 c.cm. of a mixture of equal parts of saturated sodium bicarbonate and 3-mol. sodium lactate was tried, as recommended by Findlay (1942), because difficulty was experienced in maintaining alkalinity of the urine. This was without effect, probably because the kidneys were failing. The first specimens of urine passed after 22 hours' anuria were still acid. Possibly alkalis were pushed too hard in this case, but they nevertheless seemed to do no harm. This patient was, in any event, desperately ill. The treatment of established anuria consists in the application of heat to the loins, and dry cupping may be tried. In Case VI this was apparently successful. As already stated, alkalis should be discontinued.

In order to treat the accompanying malaria, a course of mepacrine, starting in small doses—e.g., 0.1 g. daily, gradually increasing to 0.3 g. daily—should be given during convalescence. It is probably best to give mepacrine even if no parasites are present in blood films—which is usually the case—as otherwise a malarial relapse may occur. Anaemia should be treated by good food and large doses of iron.

Summary

Seven cases of blackwater fever in British Service personnel in the West African Command are described.

The relationship of the disease to subtertian malaria and the mechanism of the haemolysis and the anuria are discussed. Special reference is made to treatment with blood transfusion, alkalis, and a large fluid intake. Evidence is produced to show that alkalis are probably of value in preventing anuria.

For permission to publish these cases we wish to thank Brig. G. M. Findlay, C.B.E., Consultant in Medicine, West African Command; Brig. R. A. Hepple, O.B.E., *M.C.*, then D.D.M.S.; and our late commanding officers, Col. L. A. Harwood, T.D., and Col. W. H. McKim McCullagh, D.S.O., *M.C.* (later A.D.M.S.).

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DIAGNOSIS OF MALARIA IN WEST AFRICA

BY

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This paper is based upon experience of over 2,000 cases of malaria in white personnel at an R.A.F. hospital in West Africa. The type was almost exclusively malignant tertian. The vast majority of patients had not been exposed to infection prior to service in West Africa, and their stay was comparatively short. Drug suppression and antimalarial discipline were in force. Owing to a big drainage scheme and efficient screening, the infection rate, though not low, was less than in many places on the coast. Patients were nearly always admitted to hospital in an early stage of the disease. Pernicious cases were uncommon; only 9 of blackwater fever, 4 of cerebral malaria, and 1 of the choleraic type were seen, all of which recovered. No algid case presented. Chronic malaria was very uncommon; not more than 6 cases were seen.

M.T. malaria closely mimics many diseases; it is dangerous, and parasites are not always found in the blood. Treatment, therefore, often has to be on suspicion. However, it is possible to become a little obsessed with the diagnosis when malaria accounts for no less than two-thirds of medical admissions—with results which are not always happy. The following is an account of matters found helpful in diagnosis. Cases of malaria will be referred to as proved (or slide-positive) and clinical (or slide-negative), depending upon whether parasites were or were not found in the blood stream. Diagnosis was often helped by a short period of observation. Grave complications, however, are so liable to arise in seriously ill cases of malaria that treatment was not delayed in any serious febrile illness unless the clinical picture pointed definitely to a non-malarial disease. For routine purposes a temperature of 103° was taken as an objective dividing-line between seriously and not so seriously ill cases; these will be referred to as high- and low-fever cases respectively. In the great majority of low-fever cases it was found possible to reach a shrewd diagnosis within 48 hours; for the remainder, a working rule was adopted that antimalarial treatment should be tried when doubt still existed at the end of 4 days.

Pathological Diagnosis

Antimalarial therapy was started on finding a positive blood slide. Slides were taken on admission, before starting treatment, in all cases. The following trial was made to determine the optimal delay for blood slides in low-fever cases. Treatment was withheld in 136 virtually consecutive low-fever cases of suspected malaria—indefinitely in the first 71, and then for four days in 65. Blood slides were taken on admission, and night and morning. Ninety cases revealed parasites—66 in the first slide, 14 more within 24 hours, and 6 more within 48 hours; only 4 showed parasites at longer intervals. It was concluded that delay beyond 48 hours for this purpose was of little value. The figures are very similar to those in a series of 968 reported by Hughes and Bomford (1944) from another West African Service hospital. Slides were taken night and morning for 48 hours in high-fever cases even though treatment had been started, since it was found that parasites still appeared in an appreciable number of cases. In B.T. malaria parasites are most easily found on the rise of temperature in each rigor. Such typical rises are not common in M.T. malaria. Slides were taken in those which did occur, but parasites were by no means always found. Suppressive therapy was stopped while diagnosis was under consideration. It was started again as soon as malaria was thought excluded (i.e., a maximum suspension of 4 days).

Malaria parasites are harboured somewhere after an attack, possibly in the bone marrow. Until it is known that they cannot be found in the marrows of parasitized but symptom-free men a positive marrow smear cannot be accepted as diagnostic of active disease. Even were this the case, the number of blood-slide-negative cases of suspected malaria was far too great to justify the routine use of sternal puncture in West Africa. It was tried in a few such cases out of scientific interest, and parasites were sometimes seen.

Clinical Diagnosis

A number of clinical features were believed to assist in diagnosis. Splenomegaly was a very strong pointer. Other causes were rare. Admittedly 5% of 219 cases on the station had splenomegaly, and could be admitted with non-malarial illnesses, but this would hardly have accounted for more than 1 to 2% of admissions. The percentage, however, in febrile cases admitted to the medical wards was very much higher—approximately 25% of 406 consecutive cases. Tenderness of the spleen was virtually pathognomonic, and definite tenderness under the left costal margin, in the absence of a palpable spleen, came to be regarded as of great diagnostic value.

The anomalous behaviour of many cases of malaria superficially resembling other diseases was very helpful. Deterioration was of great assistance; the common non-malarial illnesses concerned in differential diagnosis (febrile catarrhs, simple enteritis, and dysentery) tended to recovery, and that fairly rapidly. Another valuable pointer was in the time relation between constitutional and local symptoms. In the usual non-malarial illnesses the onset might be with constitutional symptoms only, but local ones soon followed which persisted after disappearance of the former. In enteritis, for example, onset might be with 12 to 24 hours' headache, but the subsequent diarrhoea outlasted the headache by several days. In malaria, constitutional symptoms often preceded the local ones by days or persisted after their disappearance. The typical tertian periodicity of fever and symptoms was helpful when met, but unfortunately was not particularly common. Incidentally actual rigor was very uncommon and usually heralded blackwater fever. The combination of the symptoms of two non-malarial diseases, such as coryza and diarrhoea, was felt to indicate malaria. Two other points were of limited value. The degree of constitutional disturbance and the duration of illness might be incompatible with the non-malarial disease concerned. Thus a case with severe headache, a temperature of 105°, and coryza was hardly likely to be a febrile catarrh; such obvious cases were, however, exceptional.

The likelihood of malaria varied considerably between the various presenting symptom-complexes, and this was of much help in diagnosis. Very many cases presented with symptoms and signs of a general nature only. These included headache, backache, aching limbs, dry cough, vomiting, fever, splenomegaly, and herpes. They will be called constitutional cases. It was believed that all such cases should be regarded as malarial, positive slides or not, unless definite reasons appeared to the contrary. They were indistinguishable from proved cases. No common satisfactory alternatives existed; some form of heat exhaustion or an unknown virus was a possible cause, but little or no evidence existed for either. A number got worse or failed to recover until given antimalarial therapy. Others apparently recovered without, but of these an undue proportion returned shortly after discharge in frank attacks of malaria; splenomegaly was seen to subside without treatment in a case or two of this type. Constitutional symptoms might usher in many diseases which later declared themselves by local symptoms; such possibilities had to be excluded by a short period of observation.

An analysis of the symptom-complexes in 345 consecutive cases of proved malaria was rather instructive. Results (to the nearest 0.25%) are given in Table I. Four symptom-complexes

TABLE I

1. Constitutional group (dry cough in 25%)	83·25%
2. Coryza or productive cough	9·25%
3. Simple diarrhoea	4·5%
4. Dysentery	0·75%

accounted for 97.75% of cases. Constitutional symptoms only were found in the great majority. It was considered simply a coincidence that while coryza and productive cough and simple diarrhoea were the only other common symptoms, febrile catarrhs and a simple enteritis were the commonest disease after malaria. Dysentery was found in only a handful of cases. Other syndromes occurred involving differential diagnosis from such diseases as pleurisy, acute rheumatism, appendicitis, cystitis, amoebic hepatitis, and conditions leading to coma. All these were uncommon, none occurring more frequently than 0.25%. It was obvious that while malaria *might* present

many guises its common forms were few. The analysis is very similar to a larger series (846) reported by Hughes and Bomford (1944).

A mildly statistical inquiry showed the proportion of all cases with coryza and productive cough, simple diarrhoea, and dysentery which were due to malaria.

The total number of cases and the numbers yielding positive blood slides, with these symptoms, were collected for some months. The next step was to estimate the cases of clinical malaria in each group. These estimates were obtained in the following manner. First, it was assumed that all cases with constitutional symptoms only were cases of malaria (unless definite evidence had shown to the contrary). The total numbers and the number with positive slides in this group had been collected over the same period; the proportion of proved to clinical cases was noted. It was then assumed that this proportion remained the same in cases of malaria with any other symptom-complex. Figures for the cases of clinical malaria in each group could thereby be obtained from the known number with positive slides; the proportion of cases due to malaria either in the whole group or in those with negative slides could then be calculated. The results are given in Table II. The proportions were worked out separately for high- and low-fever cases. Similar calculations were made for cases of follicular tonsillitis to determine the frequency with which the activation of latent malaria by a non-malarial illness might be expected in this neighbourhood. For obvious reasons, the results can only be taken as rough guides. Sampling errors may be present in the smaller groups. The second assumption may be erroneous. Correction of the possible error in the first assumption (namely, that some slide-negative constitutional cases were not due to malaria) would, however, strengthen most of the conclusions which were drawn. Nevertheless some results were highly suggestive.

TABLE II.—*Estimated Proportion of Cases with Respiratory Symptoms, Simple Diarrhoea, and Dysentery, due to Malaria, and of Follicular Tonsillitis complicated by Malaria*

Symptom-Complex	Total Cases	No. with Positive Slides	Percentage of Cases due to Malaria	
			Whole Group	Negative Slides
Constitutional high fever	172	145	6 out of 7 gave positive slides	
Constitutional low fever	315	168	Every other case gave positive slides	
Coryza or productive-cough high fever	23	13	65	21·5
Coryza or productive-cough low fever	120	21	35	21
Simple-diarrhoea high fever ..	20	10	57·5	16·5
Simple-diarrhoea low fever	119	11	18·5	10
Dysentery high fever	19	4	25	4·5
Dysentery low fever	63	1	3	1·5
Follicular-tonsillitis high fever ..	14	2	16·5	3
Follicular-tonsillitis low fever ..	33	—	++ against (none with positive slides)	

The following conclusions were drawn. Positive slides could be expected in most high-fever cases of malaria, but probably with much less frequency in low-fever cases. The activation of a latent malaria by a non-malarial illness was uncommon in the area. Cases with dysentery and negative slides were most unlikely to be caused by malaria. Cases with simple diarrhoea, low fever, and negative slides were unlikely to be so caused. On the other hand, malaria was a not uncommon cause in cases with coryza and productive cough, or of simple diarrhoea with high fever.

A therapeutic trial produced results of interest.

All cases in the groups with low fever and constitutional symptoms, coryza or productive cough, or simple diarrhoea were observed without treatment unless (*a*) slides became positive, (*b*) the temperature rose above 103°, or (*c*) they had failed to recover after 5 or 6 days. Those recovering fully were discharged without treatment. Twenty-four of the constitutional and 70 of the other two groups were re-examined at the end of three months. Three of the 24 but only 1 of the 70 had returned in frank attacks of malaria; in all 4 instances return was within one month of discharge. The incidence of such return was thus 9 times as great in the constitutional group as in the others. Incidentally, 2 of the respiratory and diarrhoeal groups had developed subclinical malaria (see later); nothing that was remotely suggestive of chronic malaria had developed in any.

The importance of malaria as a cause in the constitutional group of cases received confirmation. Unfortunate sequelae in the respiratory and diarrhoeal groups were most uncommon, though with the methods used in the trial a number of cases of malaria were undoubtedly discharged without treatment. It was concluded that if after more careful exclusion of malaria a case appeared to be one of febrile catarrh or simple enteritis it could safely be treated as such. The matter was not entirely academic, as much working time could be saved by accurate diagnosis.

Subclinical Malaria

This term was applied to a condition seen in ambulant personnel. The main complaint was of recurrent headache. Backache, aching limbs, and malaise occurred; the sense of well-being which followed treatment was a notable feature. Splenomegaly was present in about one-third of cases. Slight pyrexia probably occurred. The general condition was good and anaemia absent. Blood slides were usually, though not invariably, negative. The incidence was estimated at about 10% of men on the station. Response to antimalarial treatment was good. The absence of anaemia and the condition of the patients excluded the diagnosis of chronic malaria as usually accepted. Latent malaria suggests a symptomless parasitization. The term "subclinical malaria" was preferred to "incompletely suppressed malaria," which it was felt laid too much emphasis on control of infection by suppressive therapy, as opposed to that by natural immunity processes.

Its existence was inquired for as a routine in all cases admitted to the medical wards and, if found, led to a course of treatment before discharge. When doubt existed as to diagnosis, its presence was thought to favour malaria.

Affected ambulant personnel were treated by an increase in suppressive therapy.

Details of the clinical data upon which this account of "subclinical malaria" was founded will now be given. A number of these cases were seen, but only 61 were observed closely enough for their records to be worthy of analysis. 41 had had headaches more frequently than once a week, and were under observation for at least one month before and one month after treatment. Ten had had headaches between once a week and once a fortnight, and were observed at least two months before and two months after treatment. Relief was judged to have taken place in the first group if headaches occurred less than once a fortnight, but in the second group only if headaches had disappeared altogether. These 51 cases were given the ordinary hospital course of treatment. Seven of them relapsed after several months, and these and 10 others were placed upon increased suppressive therapy as out-patients. Periods of observation and criteria of relief remained the same. The results are given in Table III.

TABLE III.—*Results of Treatment in Subclinical Malaria*

	Total Cases	Relieved	Definite Improvement	Relief or Improvement	Little or No Improvement
Hospital treatment ..	51	32	13	45	6
Increased suppressive therapy	17	10	4	14	3

A Note on Treatment

Treatment was given as a routine for twice as long as it took for the temperature to fall to normal, with a minimum of 7 days. Mepacrine was administered from the start, 0.1 g. t.d.s. for a maximum of ten days. If longer courses were needed, quinine 10 gr. b.d. replaced mepacrine. Quinine 10 gr. t.d.s. was given in addition for the first 2 to 3 days for the sake of its better initial control. A five-day course was employed for cases considered likely to recover spontaneously. This short course was used in the hospital treatment of subclinical malaria. Routine suppressive therapy consisted of 0.2 g. mepacrine twice a week. In the ambulant treatment of subclinical malaria 0.1 g. mepacrine and 5 gr. quinine were given daily for two weeks; 0.1 g. mepacrine was then given 6 days a week, either temporarily or permanently. This flexible scheme of treatment was considered preferable to one in which a standard course was used for all cases. Such a course would have had to be a long one to cover the more serious cases, and the loss of working time would have been very considerable. Results seemed satisfactory.

Summary

An account is given of clinical and pathological points found helpful in the diagnosis of M.T. malaria. A condition occurring

in ambulant personnel is described, for which the term "subclinical malaria" is proposed. Specific treatment is also briefly described.

I have much pleasure in thanking the Director-General of the Royal Air Force Medical Service for permission to publish this paper. I am deeply indebted to many for help in the work. In particular I wish to thank Wing. Cmdr. W. P. Stamm for numerous useful suggestions, Fl. Lieut. R. D. Tonkin for assistance in the wards, Squad. Ldrs. R. J. O'Connor and M. Nelson and their able technicians for examining thousands of slides, and Sister M. Giles for suggestions about treatment. Finally a special word of thanks to Dr. Greer of the Colonial Service for constant advice and support.

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REMOVAL OF PROJECTILE FRAGMENTS AND IMMOBILIZATION OF WOUNDS IN FORWARD AREAS

BY

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Major, R.A.M.C.

Trueta has applied John Hilton's principle of rest to the treatment of war wounds, through the agency of the plaster cast. This factor, immobilization, and another one in the attainment of rest in wounds in forward areas—the removal of the causal projectile foreign body—form the subject of this paper.

The Projectile Foreign Body

Trueta (1944) quotes Friedrich as aiming at complete excision of wounds, removing bacteria by excising the contaminated tissues in a single mass, like a malignant ulcer. Even those who attempt to carry out this aim most faithfully (Yudin, 1943) cannot do so in most instances without imperilling vital structures. Trimming and laying open for drainage is the best that can be done in the vast majority of cases. Incidental to this is the removal of projectile fragments. "The length and direction of a penetrating wound are unknown till the projectile has been located, nor has the tract been laid open throughout its extent till it has been removed" (*Lancet*, 1944). The attempt to remove the foreign bodies which act as guides to those "very complicated cavities," wound tracts, will help to establish the true nature of the wound (revealing, for example, a severed nerve, a torn joint synovial membrane, or a crack fracture), hitherto unsuspected.

"Time spent on reconnaissance" by *x* rays is "seldom wasted." "A forward operating centre without an *x*-ray unit is incompletely equipped, and only under exceptional circumstances can the omission of this important accessory service be justified" (*Lancet*, 1944). The passage of shell or mortar fragments often opens areolar planes, splitting fascia longitudinally, which closes behind them. This split may well be missed in the initial operation on the wound, and unless skiagrams are taken the presence of the foreign body may not be suspected. Fatty areolar tissue, moreover, opens before the entering projectile fragments and closes behind them as if never penetrated, and the fasciculi of coarse fibres of the deltoid and gluteal muscles rearrange themselves after the passage of a projectile, rending a "blind" search uncertain of success. No surgeon can write complacently "Wound excised" on the patient's card unless he has had the patient *x*-rayed and the causal projectile demonstrated and removed. A blister or discoloured patch in the skin often acts as a guide for subcutaneous projectile fragments, and an incision there will reveal the foreign body and drain the wound tract. But deeper fragments have no such stigmata, and skiagrams are necessary. In the field the time required for accurate location as in hospitals at the base may not be possible. But views in two planes can always be taken, giving a sufficient guide.

A recent tragic case illustrates the complications that may ensue through leaving projectile fragments *in situ*.

Case History.—A C.C.S. orderly, wounded on March 17, 1944, in the C.C.S., was taken to the theatre two hours after wounding. He was found to have a shell wound at the outer aspect of the left thigh, through the superficial fibres of the vastus lateralis. The wound was considered tangential, and layer by layer its edges were trimmed and then left open. Routine sulphanilamide powder, vaselined gauze, and a light plaster-of-Paris bandage were applied. He was evacuated on March 19 in fair condition; no undue pain had been complained of. Lieut.-Col. W. M. Capper, O.C., surgical division of a general hospital, has supplied the further history: "Admitted March 20, 1944, obviously ill and in pain. Pulse 140. Left leg tender and swollen; dark-brown oedema extending up thigh and over abdominal wall almost to umbilicus, and present in popliteal space also. Plaster removed. Local wound clean and not tender." After blood transfusion: "Operation. Wound explored locally and found to pass across thigh. There was escape of considerable amount of gas. . . . A large F.B. (about 2 in. by 1 in.) was found in an abscess cavity behind the femoral vessels. Pus and anaerobic oedema had tracked up and down the femoral sheath, and it was therefore present in the upper thigh and in the popliteal space; sartorius, rectus femoris, and vastus externus were excised, and part of the adductor magnus; he was too ill for amputation. In spite of parenteral sodium penicillin in large doses and A.G.G. serum, the patient died on March 21."

The foreign body was unfortunately missed at the primary operation. Even in a wound considered merely tangential, a skiagram should have been taken. The attempt to remove the F.B., guided by the skiagrams—antero-posterior and lateral views—would have opened the tract and given the required drainage in an area peculiarly liable to anaerobic infection.

In treating abdominal wounds the actual foreign body is often ignored. "The discovery of foreign bodies in these cases is of little importance. They may be difficult to locate in the posterior abdominal wall, and time spent in searching for them is wasted. They may also be difficult to distinguish from fragments of bone where part of the spine or pelvic girdle has been fractured in the tract" (Blackburn, 1944). But in the abdominal cavity, where vital structures are involved, the role of the foreign body, acting as a signpost directing the track of the wound, is most important. If the attempt to see the foreign body and actually feel it in the open wound is not considered essential, the preliminary view of its shadow on an *x*-ray plate is most valuable. It gives a clue to the probable viscera injured, and a guide to the position of the incision in the abdominal parietes.

In one campaign criteria for the removal of foreign bodies were when they were provoking pain, causing pressure on important structures, or aggravating sepsis (Mason Brown, Dennison, Ross, and Divine, 1940). Sooner or later the majority—H.E. shell fragments, mortar, bomb, or grenade fragments, pieces of projectiles from long-range artillery such as "Anzio Annies and Archies"—give rise to trouble. They press on nerves and erode blood vessels. The poisonous nature of certain projectiles, moreover, must be remembered. Blaxland (1942) describes a case of fatal phosphorus poisoning from a bullet.

If embedded near sphincters or in joints the constant movement in these places greatly reduces the chance of the foreign body being walled off by fibrosis. Not being walled off, the foreign body will act as a continual source of irritation and delay healing. At all times they are a potential source of sepsis liable to acute exacerbation. Though the "primary" metallic foreign bodies themselves may be sterile owing to their heat (and the familiar blister in the skin overlying the fragment that has not quite perforated testifies to this frequent high temperature), the "secondary" foreign bodies they carry in—mud, bits of equipment—are teeming with organisms. "Many of the most serious complications of infection, particularly secondary haemorrhage, can be traced to retained foreign bodies and the contaminated clothing around them" (Donald, 1944). The search for the metallic foreign bodies visible in the skiagram will help to find these non-opaque "secondary missiles, such as clothing" (Law, 1944).

A prolonged hunt for foreign bodies in shocked patients is unjustifiable, and the field surgeon leaves those in certain areas—i.e., the thorax and the head—to his colleagues with special facilities at their own centres. But in the general toilet of wounds as many as possible must be removed. The search is also advisable for psychological reasons, for patients invariably want to know if the bullet has been removed, and ask for the gory relics as souvenirs: extracted shrapnel demonstrates to the patient that his treatment has not been skimped.

In compound fractures the examining finger almost certainly will not be able to distinguish between projectile fragments and loose portions of bone, but, as such bony fragments require removal, nothing is lost by removing the loose hard lumps found in the depths of such wounds. Special instruments—e.g., Bergonié's electric vibrator, D. A. Willis forceps (Hamilton Bailey, 1942)—are not available or required in forward areas; a long pair of artery forceps or bullet forceps are sufficient.

Immobilization

Transportation of wounded is an administrative task. Field surgeons must assist this by making their patients fit for transportation. In the Middle East campaigns 1940–3 "travel over rough desert tracks was generally regarded as the most serious ordeal for the badly wounded man" (Wilson, 1944). Methods of immobilization had to be learnt that would stand up to the gruelling test of a long evacuation line. Once again, with recent Allied advances, the same rules apply. In the rows of patients laid on stretchers in the tents of a staging unit the faces of men correctly splinted contrast strongly with the apprehensive haggard appearance of those in whom a loosely fixed Cramer wire splint or an insufficient plaster slab has utterly failed to prevent every jolt and bump shaking up their wounds. "I had a stiff journey, sir, as it went bouncing up and down," is the usual expression of patients, pointing to an unsplinted limb. Careful plaster technique pays on the line of communication: firm, evenly applied plasters are far more comfortable than crumpled, cracked, and ragged-ended efforts.

All *flesh wounds* of any extent should be adequately protected. A penetrating wound over the scapular angles or the point of the heel will become the seat of cellulitis unless carefully padded. Wounds of the flank need covering by a plaster plaque—not merely a many-tailed bandage, which rucks up so easily. Penetrating wounds of the shin region treated without *x*-ray facilities should invariably be immobilized in a plaster. Cracks in the tibia occur very often with modern projectiles, and, if immobilized, many hours of misery are saved before reaching a centre where a skiagram puts the diagnosis beyond doubt. In addition, reactionary haemorrhage from the crural arteries is apt to occur in calf wounds if these are not immobilized in plaster casts. Light plaster casts are also advisable to protect amputation stumps on their journey down, and now plaster corsets are recommended for abdominal wounds (H. Rogers, 1944).

Gunshot wounds of the vertebrae should be immobilized in a padded posterior shell. With partial injuries of the spinal cord, and when the cauda equina is involved, any chance there may be of recovery when the patient reaches a neurosurgical centre is irrevocably lost if no attempt is made to prevent further damage to the nerve tissue by broken laminae fragments and foreign bodies. The risk of pressure sores in a well-padded plaster shell is a minor matter compared with this much graver possibility. The plaster may be a dorsal shell, extending as far forwards as the anterior axillary line at the sides and including the legs and feet to prevent foot-drop, or a lesser shell fixing the trunk only, if there are no neurological signs. A fractured spinous process travels much better in a posterior shell than lying on a stretcher merely protected by cotton-wool. When complete paraplegia is present, however, rigid immobilization is not so necessary, because irremediable damage has occurred; still, such a case will travel better in a well-padded plaster shell.

Fractured pelvic bones should be similarly fixed; a few turns of elastoplast and a rolled-up blanket on each side are most inefficient immobilizing agents in such cases.

"A striking feature of war injuries is the preponderance of wounds of the extremities" (Trueta, 1944). "All forward surgeons must be orthopaedists up to a point" (Donald, 1944). Limb wounds should therefore receive as much attention as more spectacular abdominal injuries. In a C.C.S. recently, over a period of 4 months, in 687 patients with 873 lesions, 717 were limb wounds—i.e., 82%. In another 3-months period, in 204 patients with 299 lesions, 237 were limb wounds—i.e., 79%.

In *fractures of the acetabulum and upper third of the femur*, often with large gluteal wounds, the Thomas splint is unsatisfactory, and a Whitman plaster should be applied. Two standard methods for fractures of the shaft of the femur are fully described by Buxton (1942, 1943). The complete "Tobruk" plaster—i.e., enclosing the limb in a plaster case and then fixing this in a Thomas splint by further plaster bandages—gives the best immobilization in cases with gross comminution. The "double cuff" method—i.e., a cylinder of plaster-of-Paris round the limb and bars of the Thomas splint, incorporating the adhesive strapping extension already applied—gives adequate immobilization in most cases. Rotation of the limb outwards in this method is prevented by rolls of cotton-wool on each side of the limb between it and the Thomas splint bars underneath the plaster. Some prefer strapping applied to the unshaven skin for better traction; but as secondary suture at the base is favoured by a clean-shaven skin shaving is preferable. In the cuff method, moderate tension is maintained on the fracture by inserting the usual "Spanish windlass" stick between the tapes or cord leading from the extension strapping to the end of the splint. A fixed extension after the principle of one method used at orthopaedic centres (Charnley, 1944) is therefore obtained. If the tapes are carried round the side bars of the Thomas splint before knotting over the end of the splint the effect of extension is largely lost. The foot and heel are generally left out in this method except when foot-drop is present owing to sciatic-nerve injury. Meticulous attention must be applied to the sling under the heel; if carelessly applied, and twisted, a pressure sore will form in 24 hours. The Thomas splint, slightly bent at the knee, is preferable to the straight splint in those appliances, as the knee-joint is thus kept in the optimum position of slight flexion.

Compound fractures of the tibia are immobilized in an above-knee plaster. This, however, in itself is not enough. Such plasters have the knee slightly flexed. A pillow or folded blanket is required under this bend to prevent the limb rolling outwards and the main weight being borne on the heel. Such a pillow or blanket often shifts, and the heavy, slightly angled plaster then lies loose on the stretcher. The patient invariably tries to twist himself over on one side to let the leg lie outwards, flat. With other wounds present as well, this may be difficult or impossible. In any case, the patient lies in an awkward strained position. The problem is solved by placing the limb encased in a plaster on a Thomas splint supported by the method L. S. Rogers (1943) devised. A foot-piece of a large size is taken and plastered firmly to the splint with the circle end downwards. A piece of Cramer wire 2 ft. long is plastered across the base as a horizontal rest. With this support, which is a self-contained apparatus, the patient can be moved from a stretcher to a bed without disturbing the position. The limb is elevated in this method; "I consider this precaution [elevation] of the utmost importance in preventing oedema and consequent constriction" (Trueta, 1944). The contraindication to this method is when grave vascular damage has occurred—i.e., when the posterior tibial artery has been involved. Such cases require the limb to be below the heart level, to conserve the blood supply.

All *penetrating or perforating wounds of the foot*, with compound fractures of tarsal and metatarsal bones and phalanges, should be immobilized in plaster casts. Wounds dressed merely with cotton-wool and gauze become painful: the foot swells and the patient tends to hold it in an equinus position unless immobilized. Sepsis also is rendered liable, in spite of penicillin and chemotherapy, and secondary suture at the base is jeopardized. This applies especially to wounds of the tarsal bones, so liable to osteomyelitis. 100% of compound fractures of the os calcis arriving in South Africa (D.M.S. Middle East, 1943) required amputation. The plaster boot stopping half-way up the leg is not sufficient; unless the cast is carried up over the curve of the calf muscles to the level of the tibial tubercle it is quite insecure. A Cramer wire splint is a most unsatisfactory immobilizing agent, except for the most temporary occasions. It is too apt to work loose, as it cannot be moulded accurately to the limb contours like a plaster.

Compound fractures of the scapula, clavicle, and humerus should be immobilized in a thoraco-brachial plaster. Flannel bandages are not sufficient; they have a great tendency to unwind in this position with restless patients. The application

of this plaster cast has been greatly facilitated by Jack's (1943) contrivance. The axilla is well padded. The humerus itself is immobilized by a "plaster from the nape of the neck down over the elbow and up to the axilla" (Buxton, 1942) and approximated to the side. The elbow is fixed at a right-angle and the forearm brought across the front of the lower chest. The forearm is immobilized by an ulnar plaster gutter extending to the heads of the metacarpals, with fingers free for full movements. The whole, including the shoulder on the affected side, is incorporated in a circular plaster round trunk and limb. A patient thus fixed can travel comfortably, and is more portable than in the aeroplane-splint position, with shoulder abducted to 90°.

Wounds of the carpus and forearm require padded split plasters, immobilizing the joint above and below the site of the fracture; the metacarpo-phalangeal joints should remain free. Metacarpal fractures, if not fixed with a firm dorsal slab but merely by a gauze bandage, will invariably arrive at base with the hand in an acutely palmar-flexed position—the worst possible for rehabilitation if not corrected immediately.

Wounded joints also need immobilization. Several severe reactionary haemorrhages have been observed from the deltoid muscle in wounds of that muscle also involving the shoulder-joint that were not placed in a thoraco-brachial plaster. When a foreign body is present in a joint, failure to immobilize is inexcusable. All penetrating wounds of the knee-joint should have strapping extension applied and the limb put in a Thomas splint. Any case in which the knee-joint has been aspirated should be similarly treated: a perfunctory plaster slab or Cramer wire splint is inadequate, and indeed inhumane.

Elevation of the limb in plaster limits oedema and constriction; often simple elevation in itself is equivalent to the administration of a sedative for relief of pain. It is safe, in addition, to pad and split plasters. "Don't use unpadded plaster casts in the early stage of treatment; even if it is proposed to split the cast and to elevate it, don't use an unpadded cast" (McIndoe and Watson-Jones, 1944). This applies especially to wounds of the hands; the rapid and extensive swelling of the dorsal subaponeurotic space with injuries as well as in whitlows makes splitting of a plaster enclosing the hand imperative. The splitting means not merely a division of the plaster cast by a slender knife-cut and not a partial splitting leaving upper and lower ends of the cast intact, but freely opening the cut at least 1/4 in. to allow for expansion the whole way down. An unpadded, unsplit plaster, enclosing the toes and forefoot for injuries there, should never be used. It is similar to the old Scottish instrument of torture "the boot," and a patient in one suffers accordingly. Splitting of the plaster cast itself may not be sufficient. Circular gauze bandages underneath the plaster must be cut, for when caked with drying blood they form constriction bands like iron rings.

Lack of immobilization may mean an endeavour to maintain free finger, toe, and joint movements. It has been noted that excessive splinting has done much harm during the war, especially through its effect in causing stiffness of the joints of the hand (Ritchie Russell and Harrington, 1944). But pros and cons of early movement, particularly in the treatment of fractures, recently under discussion again (Burns and Young, 1944), are not the concern of the surgeon in forward areas. Without immobilization the more immediate risks of shock, haemorrhage, and grave infections are run. Firm immobilization must therefore be one of the most important tasks of the forward surgical team.

In conclusion, one criticism of the plaster cast must be remembered: "The early stages of gas gangrene are easily overlooked or discounted, and the risk is increased by the modern closed methods of treatment" (Osborn, 1943). In a recent series of 44 cases of gas gangrene, however (MacLennan, 1944), in no case was the onset attributed to too tight a plaster. Keeping the warning in mind, the use of the padded split plaster is safe and sound.

I am grateful to Brig. F. A. R. Stammers for his advice and discussion over many of the problems discussed above. I am also grateful to Lieut.-Col. D. M. Mitchell for permission to record the above observations; to Capt. R. W. Ross for many suggestions; and to Pte. J. H. Foulds, R.A.M.C., for his painstaking and accurate recording of the case histories on which the above opinions are based.

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THE RISE IN INCIDENCE OF SCABIES IN A CLOSED COMMUNITY USING ORDINARY SOAP, AND ITS SUBSEQUENT FALL ON THE SUBSTITUTION OF 5% TETMOSOL SOAP

BY

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In a series of previously published papers Davey, Gordon, and Unsworth (1944) have shown that soap impregnated with tetmosol (tetraethylthiuram monosulphide) to the extent of 5, 10, or 20% cures a high proportion of animals infected with mange due to *Notoëdres*. The same authors and their colleagues (Gordon, Davey, Unsworth, *et al.*, 1944) proved that soap similarly impregnated with 20% tetmosol cured 80% of established human cases of scabies due to *Sarcoptes scabiei*.

In addition to proving the curative value of tetmosol soap these authors made a much more important observation, in that they proved that tetmosol soap completely protected animals against the acquirement of scabies due to *Notoëdres*. This fact, considered in conjunction with the remarkable curative properties of tetmosol soap when employed in connexion with human cases of scabies, caused them to make the recommendation that this soap should be used in infected communities to prevent the spread of the disease. The idea of employing such a universally used substance as soap as a vehicle for the sarcopticide has obvious advantages, for, if it could be shown that it protected against scabies and that little risk of dermatitis attended its use, the soap could be issued to the population without the necessity for parades or any other medical supervision. This method would be not only of great value in wartime but of still greater value in post-war Europe, when dealing with crowds of homeless refugees. At our suggestion Dr. Kenneth Mellanby (1945) carried out a test of the prophylactic and curative value of 10% tetmosol soap in a mental hospital where scabies was endemic. Of 1,213 patients who acted as controls, 1.8% were infected at the start of the experiment, 2.1% after six weeks, and 3.5% after 11 weeks, a total of 24 new cases having occurred in the community. Seven hundred and five patients, of whom 13.2% were infected, had 10% tetmosol soap issued to them in place of ordinary soap; at the end of six weeks the percentage of infected had fallen to 1.3, and was found to be at the same level after a further five weeks. In contrast to those using non-medicated soap, not a single new case had occurred. As a result of his investigations Mellanby came to the conclusion that: "These experiments show that tetmosol soap can act as a very efficient means of

* Working under a grant from Imperial Chemical (Pharmaceuticals) Ltd.

controlling scabies. It not only prevents the disease from spreading but also cures the majority of those who use it for a few weeks. There seems no doubt that its general employment would rapidly eliminate scabies from a community."

While Dr. Mellanby's experiment was in progress Gordon and Unsworth (1944) conducted a further series of experiments on the prophylactic value of tetmosol soap among animals exposed to *Notoëdres* infection, and showed that 5% tetmosol soap, when applied once daily in the form of a lather containing 0.9% tetraethylthiuram monosulphide (the concentration at which the drug would reach the skin in ordinary ablutions), completely protected rats against a moderate infection with *Notoëdres*, whereas 2% and 1% tetmosol soap, when used under similar conditions, protected only a proportion of the rats so exposed. As a result of these experiments they suggested that "5 per cent. tetraethylthiuram monosulphide when incorporated in soap represents the lowest concentration of the drug which is likely to confer complete protection from scabies when the impregnated soap is used once daily."

By the courtesy of Dr. Mellanby and the staff of the mental hospital concerned, we have been allowed to continue the scabies investigation, and below are given the results obtained from the use of 5% tetmosol soap.

The Test

A group of 400 patients who had previously formed part of Dr. Mellanby's control population of 1,213 were again examined by us seven weeks later, making a total observation period of 18 weeks without treatment. The patients were then re-examined after six weeks and after a further period of seven weeks. This group of 400 persons was therefore kept under observation for a total period of 31 weeks, during the last 13 of which they were using 5% tetmosol soap.

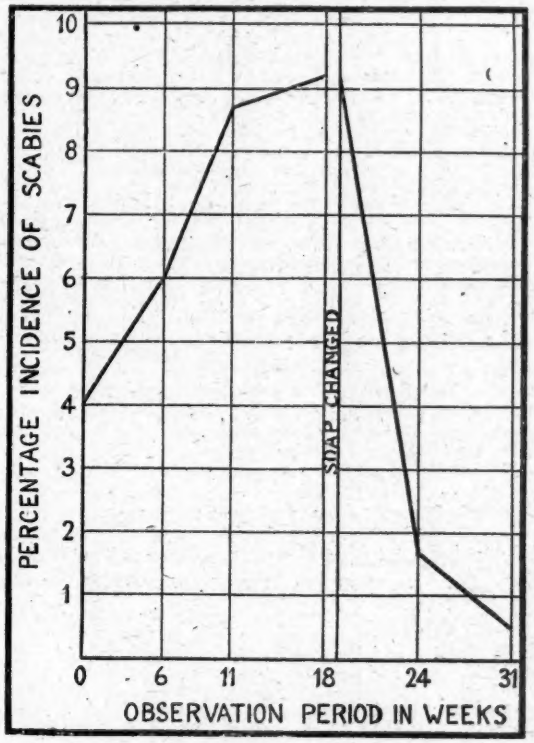
Before considering the results obtained by the use of 5% tetmosol soap in an infected community we wish to make one point clear. Examinations could be carried out only on the hands and arms and, in some doubtful cases, feet of the patients, a positive result being recorded only after a live mite had been demonstrated. Presumably owing to this partial method of examination a number of the cases recorded as negative were positive, although not on the hands and arms. This is shown by the fact that some cases without treatment were positive at one examination, negative at the next, and positive subsequently. It follows that the incidence of scabies on any date cannot be lower than that shown in the Table, but it may have been higher. It is important to note that our results with 5% tetmosol soap are directly comparable with those obtained by Mellanby (1945) when using the 10% strength, since the technique employed was the same.

The results obtained when using this method of examination on six occasions, conducted at intervals of approximately six weeks, are shown in the Table and in the Graph based on it.

Table showing Increase in Incidence of Scabies in a Closed Community at Various Intervals during a Period of 18 Weeks, and Therapeutic and Prophylactic Effects Following the Substitution of 5% Tetmosol Soap for Ordinary Soap

Soap	Time of Observation	No. of Weeks from Start	Total Persons Examined	No. Positive	% Positive	No. of New Cases During Each Period
Ordinary toilet	1st examination: 6–9/6/44	—	400	16	4	—
	2nd examination: 24/7/44	6	400	24	6	8
	3rd examination: 30/8/44	11	400	35	8·7	11
	4th examination: 19/10/44	18	400	37	9·2	2
Soap Changed						
Impregnated with 5% tetmosol	5th examination: 1/12/44	24	398	7	1·7	1
	6th examination: 22/1/45	31	392	2	0·5	0

It will be seen from the Table and the Graph that during the 18 weeks in which the community used ordinary soap the total number of cases of scabies rose from 16 (4%) to 37 (9.2%) and that 21 new cases were observed. During the subsequent 13 weeks, in which the community used 5% tetmosol soap, the number of cases fell from 37 (9.2%) to 2 (0.5%) and only one new case of infection was observed, this patient having contracted scabies some time during the first six weeks of using the impregnated soap.



Graph plotted from Table

Mellanby (1945), when recording the results of using 10% tetmosol soap in a community of 705 persons for 11 weeks, observed three cases of dermatitis, all of them among women. In the present series of observations 400 persons, all of them women, used 5% tetmosol soap for 31 weeks without any cases of dermatitis being observed.

Summary and Conclusions

The incidence of scabies in a closed community of 400 persons was observed over a period of 31 weeks, during the last 13 of which 5% tetmosol soap was substituted for ordinary toilet soap.

During the 18 weeks in which ordinary soap was used the incidence of scabies rose from 16 cases (4%) to 37 (9.2%) and 21 new cases of scabies were recorded. At the end of this period 5% tetmosol soap was substituted for ordinary soap, and during the remaining 13 weeks of observation the incidence of scabies fell from 37 cases (9.2%) to 2 (0.5%) and only one new case occurred. This case appeared during the first six weeks, no new case occurring during the last seven weeks of using the impregnated soap.

No cases of dermatitis were recorded among the 400 persons using 5% tetmosol soap for 13 weeks.

It is concluded that 5% tetmosol soap acts as a prophylactic and curative agent against scabies and is an effective means of controlling the disease in an infected community.

We are greatly indebted to Prof. H. A. Krebs, Director of the Sorby Research Institute, who allowed the volunteers at the Institute to assist us in carrying out the investigation. We have also to thank Imperial Chemical (Pharmaceuticals) Ltd., who, in collaboration with Messrs. Lever Bros. and Unilever Ltd., supplied us with the impregnated soaps used in our experiments.

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Medical Memoranda

Ischio-rectal Abscess Obstructing Delivery

The following case seems worthy of record because the condition must be rare:

A primipara aged 25 had been troubled with intermittent attacks of cystitis due to *B. coli* for the last three months of her pregnancy. The attacks were easily controlled by giving the patient 10 c.cm. of a 20% solution of calcium chloride in a glass of water twice daily. This treatment had been recommended to me by the late Sir E. Sharpey-Schafer, who found that this solution of calcium chloride rendered the urine acid (*p*H 5) and so inhibited the growth of B. coli.

With the onset of labour the patient complained of pain in the perineum at a point about "7 o'clock" with reference to the anus. At this point there was a firm elastic swelling about the size of a golf ball. When the head came down on the perineum the patient was unable to exert any pressure to help delivery because the pain was so intense; and the swelling was making the perineum rigid and thus holding the head back. The swelling was an ischio-rectal abscess, and to avoid rupturing it I did an episiotomy on the left side of the vagina and delivered the head by forceps. Three days later the abscess was opened and drained after the vagina had been carefully shut off with sterile gauze. A sample of the pus yielded a pure growth of *B. coli* (R.C.P.Ed. Lab.).

Recovery was uneventful. A subsequent pregnancy in three years' time was perfectly normal, with no recurrence of the *B. coli* infection.

I am indebted to Prof. Learmonth, Department of Surgery, Edinburgh University, for his kindly interest in this case.

North Berwick. A. C. MALLACE, *M.C.*, M.A., M.B., CH.B.

A Case of Uterus Didelphys

The following case should be of interest on account of its rarity:

HISTORY

An unmarried girl aged 26, serving in the W.A.A.F., was admitted to an E.M.S. hospital complaining of dysmenorrhoea. Appendicectomy had been performed six years previously for acute appendicitis. She had amenorrhoea for six months after the operation, and since that time had suffered from severe dysmenorrhoea; otherwise her menstrual history was normal. Puberty occurred at 16; periods were regular 3/24 with the above exception. Her symptoms of dysmenorrhoea had been very distressing, the pain being of greatest intensity six hours premenstrually and lessening to some extent once the flow started. She described no other abnormal symptoms of particular note.

On examination the patient was seen to be well developed physically and secondary sexual characteristics were well marked. No abnormal physical signs were demonstrated. Vaginal examination under pentothal-gas-oxygen anaesthesia revealed the following points: Two intact annular hymena were present, together with two distinct vaginal canals, of equal size. The mucous membrane appeared normal. There were two distinct cervices, small but nevertheless not rudimentary. Both cervical canals were patent. A uterine sound was passed into each canal for a distance of 2½ in. in the direction of retroflexion, and failure to "click" the tips of the two sounds indicated the presence of a double uterus. Bimanual examination then revealed a distinct sulcus between the two uteri and that both were retroflexed.

Lipiodol injection of both sides, carried out with direct visualization under pentothal-gas-oxygen anaesthesia, demonstrated conclusively the existence of two distinct uterine cavities and also that on each side the Fallopian tube was patent. The lipiodol, however, escaped rapidly into the pelvic cavity and the radiographs were not very satisfactory.

REMARKS

The above is an instance of one of the extreme types of duplication of the genital tract due to failure of fusion of the Müllerian ducts in their whole extent, the defect having arisen early in development before their differentiation. The uteri were fused only at their cervico-vaginal portions, and even then fusion was incomplete. It represents, in fact, a true uterus didelphys, of which there are very few cases on record. The most extreme case, described by Gemmell and Paterson in 1913, in which duplication of the vulva and also of the urinary tract was observed, shows the end-results of failure of fusion of structures other than the Müllerian ducts; but the case I have described presents features of Müllerian origin only, though in a very complete form. In cases of uterus didelphys the hymen is usually single, but in this instance there was definite duplication. Otherwise the case does not differ essentially from those already on record.

It will be of great interest to follow the progress of this case and, in particular, to learn of the details of the first pregnancy.

I am indebted to Mr. G. S. Davidson, consultant gynaecologist, and to Col. G. M. Millar, medical superintendent, for granting me permission to publish this case.

FORBES W. HENDERSON, M.B., CH.B.,
Stracathro Hospital, Brechin. House-surgeon.

Reviews

MEAKINS'S PRACTICE OF MEDICINE

The Practice of Medicine. By Jonathan Campbell Meakins, M.D., LL.D. Fourth edition. (Pp. 1,444; illustrated. 50s.) London: Henry Kimpton. 1944.

Prof. J. C. Meakins rightly regards the practice of medicine as probably the most entrancing profession in the world requiring as it does an understanding of and sympathy with all aspects of human life. The day of the family doctor is held by some to have passed away. This he thinks would be unfortunate, for the physician who knows the patient from birth has a perspective to which no one else can attain. Modern developments have improved technique and raised the average health of the community; but he asks, "Has it done so without the loss of a certain finesse and understanding of the human frailties and the helpful counsels of an old and trusted friend which made medicine a profession and not a trade?"

It is in this spirit the author conceived his textbook *The Practice of Medicine*, which has now reached its fourth edition. Naturally this new one is tinged by his war experiences as Brigadier and Deputy Director of Medical Services, R.C.A.M.C., leading to such topics as the crush syndrome, the hepato-renal syndrome, blast injuries, jaundice after administration of human serum, and the epidemic type. Each of these has as a matter of fact thrown important light on the pathology of the diseases of civil life. The sulphonamides and penicillin receive due consideration, as does malaria—now a world-wide problem in prophylaxis and treatment. Atypical or virus pneumonia has become a clinical entity. The study of traumatic shock, for which there has been such abundant opportunity, has clarified our concepts of disturbance of psychological balance, and thrown light on the sequence of events in burns and in dehydrating diarrhoea. All this has led to extensive revision in view of the new knowledge. Throughout we see the impact of military experience on civilian life.

Due emphasis is laid on the importance of diet and proper housing in the maintenance of health—and on the trend towards a preventive attitude. The other great factor in the forward march stressed by the author is the rapidly advancing concept and understanding of psychosomatic processes, for there is hardly a region of the body where this does not apply. Prof. Meakins has a decided belief in the value of visual impressions and has therefore enriched his pages with 517 illustrations, 48 in colour. It is an excellent if somewhat monumental tome of more than 1,400 pages. We may well ask, How much will examiners expect the student to remember?

OBSTETRICS AND GYNAECOLOGY

Combined Textbook of Obstetrics and Gynaecology for Students and Practitioners. Fourth edition. Revised by J. M. Munro Kerr, R. W. Johnstone, James Hendry, Dugald Baird, James Young, Donald McIntyre, E. Chalmers Fahy. With additional contributions by Charles McNeil and G. Jackson Wilson. (Pp. 1,208; illustrated. 42s., plus 1s. postage.) Edinburgh: E. and S. Livingstone. 1944.

This excellent combined textbook has been completely revised in its fourth edition and is now better than ever. It can be warmly recommended both to medical students and to general practitioners, and the price of 42s. is most reasonable. We would agree with the authors that a textbook of this type is not the place to discuss the finer points of surgical technique, nor is a volume written primarily for students the place to discuss the details of the more difficult problems of differential diagnosis and treatment in either obstetrics or gynaecology. Such topics have been skilfully handled throughout the book. The revised section dealing with analgesia and anaesthesia brings this subject up to date with references to cyclopropane anaesthesia, pudendal and parasacral blocks. The importance of the Rh factor in obstetrics receives due attention. Illustrations are for the most part excellent, but Fig. 224 depicts a type of episiotomy which it is doubtful whether any of the authors would perpetrate. One or two of the plates illustrating points of radiological interest are a little heavy. It is somewhat surprising to find pituitary extract in doses of 1 c.cm. being advised in the treatment of obstetric shock and in the control of post-partum haemorrhage, and one cannot help wondering

whether the high mortality apparently associated with manual removal of the placenta in the experience of the authors might not have been due to the use of this drug under these circumstances. In discussing the treatment of the extended breech it is still advocated that a foot should be brought down early in the second stage, and many readers will feel that episiotomy is not given the place it deserves in the conduct of a breech delivery. Apart from these points of criticism the teaching throughout is conservative and orthodox. It is clearly expressed and well illustrated in a way which will appeal to students and doctors alike.

OPERATIVE SURGERY

Operations of General Surgery. By Thomas G. Orr, M.D. (Pp. 723; with 1,396 step-by-step illustrations on 150 figures. 60s.) Philadelphia and London: W. B. Saunders Company.

Textbooks of operative surgery fall roughly into two categories. The one, which may be called, perhaps not too aptly, academic, teaches the classical operations in detailed steps and is that most used in the teaching of the subject to students for examination purposes. The other type, of which *Operations of General Surgery*, by Thomas Orr, professor of surgery at the University of Kansas, is an example, gives a much scantier account of operative technique, but covers a very wide field and is less concerned with the classics. For this reason such books tend to be more absorbing to the student reader, who possibly gets the impression that he is exploring the exciting newer surgical fields without the irksome and tedious necessity for concentrating upon the "donkey-work" so essential to the acquiring of a sound surgical ability. To read these books is as delightful as listening to a good recording of Kreisler or Menuhin playing, without having one's attention unwillingly drawn to the painful scrapings of the violin aspirant as he applies himself over the weary hours to his practice exercises. Since the great majority of students will not practise surgery this method of approach may be quite proper; it is certainly more popular in the United States than here. For the budding surgeon, however, there is no short cut; he must rely upon the older fashion of book, of which luckily there are several excellent examples in our literature. Their rather heavy going can be relieved from time to time by reading a chapter or two of the former type.

In the volume under review the whole range of general surgery is covered in an attractive way; the many illustrations are of as high a quality as the text. We cannot help feeling, however, that in the matter of balance between the sections the author has not been entirely happy; there is a tendency to describe new and attractive procedures at length while omitting other matters of greater frequency and importance. As an example, adrenalectomy, thymectomy, and operative obliteration of the ductus arteriosus are described at length, but there is no account of the surgery of intracranial tumours or abscesses, of pituitary tumours, nor indeed is there anything to tell the surgeon how to enter the skull in these cases. Perhaps this lack of balance is best assessed by noting the space devoted to each section. Thus the whole of nervous surgery, including the peripheral nerves, the spinal cord, and the brain, is dismissed in 24 pages, while the sympathetic system alone occupies 19 pages; in the thoracic section of 56 pages the closure of chronic empyema cavities takes no fewer than 12 pages.

The general standard of production of the book is very good, the semi-art paper used allowing excellent reproduction of the illustrations, but we think the author must revise the balance of the various sections in any future editions.

ENDOCRINOLOGY

Recent Advances in Endocrinology. By A. T. Cameron, D.Sc., F.R.I.C., F.R.S.C. Fifth edition. (Pp. 415; illustrated. 18s.) London: J. and A. Churchill. 1945.

The fifth edition of this well-known textbook has been largely rewritten in order to pay more attention to the clinical aspects of endocrinology without increasing the size of the volume, thereby adding to its value to the practitioner. The principal new points which the author stresses are the light that the use of radio-active iodine has thrown on thyroid function, the close association between the parathyroids and the control of phosphate excretion, and the clearer knowledge of steroid hormone chemistry. He believes that the posterior pituitary produces only one hormone, and that Fröhlich's syndrome is not endocrine in origin, while renin produced by the kidney must be regarded as a hormone. Throughout insistence is laid on the use of accurately standardized preparations of known activity. This remains one of the best textbooks on endocrinology, and is all the better for retaining such a manageable compass.

Notes on Books

Malnutrition (Quaker Work in Austria, 1919–24, and Spain, 1936–9), by NORAH CURTIS and CYRIL GILBEY, is published at 2s. by the Oxford University Press, and it recounts the work done by missions sent out by the Society of Friends. The events in Austria and Spain left Europe hungry and with millions of children suffering from malnutrition, which is more intractable than famine. Famine happens to a whole community living in a definable area: therefore it is less difficult to know whom to feed. Malnutrition, however, with its lowered disease resistance, requires special supplementary diets for selected children in the birth-to-six-years range, so relief measures must be based on extensive individual inquiry and medical supervision. The vast experience of the Society of Friends has shown them the best methods of rehabilitation in undernourished families and disrupted homes. Quakers realize that the New World cannot be securely built save on the restored health of the peoples. This booklet tells how the Society deals with the problems. First it makes a survey, and this is followed by food relief, through welfare centres, distribution depots, and children's homes. The administrative centre works in co-operation with Governments and local authorities. Though in very condensed form much valuable information is given. The authors find that methods useful in one country are inapplicable in another and that malnutrition can be dealt with only by common-sense handling of each situation. The recent debate in Parliament, introduced by Earl Winterton, has proved the urgent need for more active consideration of post-war starvation.

Miss EVELYN C. PEARCE'S *Medical and Nursing Dictionary and Encyclopaedia* appeared originally in 1933 under a shorter title. It was written from great experience as sister-tutor for many years at the Middlesex Hospital and as an examiner of nurses. The author's intention was to give her readers a general view of the treatment and nursing of the disorders and diseases they would meet in their work, and assist them in preparing for the final State examination. In the course of revision at frequent intervals the contents have grown, and for the seventh edition (Faber and Faber; 12s. 6d.) a great deal of material has been rewritten and new information added. It is a very comprehensive book, and the fact that it extends now to well over 700 pages will hardly be realized at first glance. The slimming process has been accomplished by wartime methods of printing and production, but the type is clear and the paper reasonably opaque. As before, the nursing details are given in excellent fashion, and the book may be recommended with confidence.

A sixth edition of Dr. E. B. JAMIESON'S *Companion to Manuals of Practical Anatomy* has appeared three years after the fifth, and it well maintains the principal characters of the previous issues—namely, a concise statement of the essential elements of human anatomy dealt with in the main from the systemic standpoint; but where in the opinion of the author it has appeared advantageous to treat the subject from the regional standpoint he has not hesitated to include short general descriptions of the position and relations of the contents of such parts as the axilla or popliteal space, or the general anatomy of such regions as the suboccipital triangle, inlet of the thorax, perineum, palm, or sole of the foot. The 35 pages devoted to development require illustrations to render them easily understood by a beginner, and although without these the verbal description may serve more advanced students as a reminder of some of the principal stages in the formation of the embryo and its appendages, it is doubtful whether this short epitome of a large and important subject will be of much value, except for the purpose of revision. The *Companion* considered as a whole is a straightforward statement of the main facts of macroscopic anatomy, clearly expressed and remarkably free from errors. It is well produced in a convenient form, so that it can be carried in a pocket and studied at odd moments. The Oxford University Press publish it at 16s.

Dr. Lewis Smith, consulting physician to the London Hospital, who died at Criccieth on Sept. 17, left estate valued at £98,236. He bequeathed £20,000 to his wife, and, after other bequests, the residue on trust for her for life, and then £10,000 to the London Hospital Medical College, to provide a Lewis Smith scholarship in clinical medicine, and the remainder to the Royal Medical Benevolent Fund.

BRITISH MEDICAL JOURNAL

LONDON

SATURDAY MARCH 10 1945

CLINICAL SCIENCE AND MEDICAL TEACHING

At the end of the last war there was little doubt in men's minds about the best method of clinical teaching. The student was enjoined to work hard at his pathology, and he was told that if in addition he attended regularly in the wards he would have little difficulty in learning the art of medicine. In Osler's textbook descriptive medicine reached a peak from which it has steadily declined as textbooks have become more compendious and less vital, and MacCallum presented pathology with equal charm as the science of the reaction to injury. The circumstances which have disrupted this happy state of affairs are not far to seek. The first was the development of ancillary methods of investigation, particularly biochemistry and radiology. The second was the increasing tendency to specialization and fragmentation of the clinical field. The third was the advance from the therapeutic nihilism of Osler's generation to the therapeutic successes and prospects of to-day. The result is that after this second world war a radical revision of the curriculum seems desirable, but we have not yet reached agreement on how it is to be achieved. A number of general principles have been enumerated, more particularly in the Goodenough report, but difficulties soon arise when one attempts to deduce from them the actual details of a course. These difficulties are especially great if it is agreed, with the Goodenough Committee, that the medical course must be kept at a reasonable length. The decline in the birth rate and the financial stringency to be expected after the war are strong reasons for trying to get medical students qualified and on the *Register* within a period of 5½ years.

The Goodenough Committee unfortunately did not discuss the motives which cause students to take up medicine as a career and the incentives which inspire them at various stages of their course; nor does its report attempt a "job-analysis" of the physician's work, particularly in general practice. Psychological factors must obviously be considered in relation to the gap between pre-clinical and clinical studies which the Goodenough report is so anxious to bridge. The pre-clinical student is a university student, living in the academic world, attempting to learn to live the good life, to have a disinterested love of knowledge, and to share in the social and athletic life of a homogeneous community. The clinical student becomes an active member of a heterogeneous community in the contemporary world, and his outlook on life changes. He comes under the influence of teachers whose business is the healing of the sick rather than the acquisition of knowledge. His attention turns from ideas to people, and in nine cases out of ten his most powerful motive is to qualify as rapidly as possible. His enthusiasm for the pre-clinical studies in which he had hitherto found so much satisfaction fades for a time, and classes in applied anatomy and physiology are commonly felt to be a sterile academic exercise. If the psychology of the student stands in the way of the integration of pre-clinical with clinical studies, the psychology of the teachers and the nature of the material to be taught stand in the way of the correlation of the clinical studies, in particular pathology and preliminary medicine. The study of reactions to injury has usually followed the route of general pathology first and special pathology later, which is not necessarily the best approach to the patient. While it is easy enough to arrange special pathology in parallel with clinical studies of the same types of disease, it will be harder to co-ordinate the important first steps in general pathology and clinical science, both with each other and also with the pre-clinical studies which have gone before.

Another popular generalization is that clinical medicine must be more scientific and that emphasis should be placed on the inculcation of fundamental principles and methods, rather than on purely factual knowledge. It is not clear what these fundamental principles and methods are. The pathologist may interpret them as the methods of the experimental laboratory, the clinician as the exact analysis of the mechanism of symptoms. The methods which led Astwood and his colleagues[1] to the discovery of thiouracil are surely quite different from the methods by which Sir Thomas Lewis's pupils have analysed the nature and meaning of the eye changes in exophthalmic goitre.[2] The value of the experimental method in research is indubitable. What is in question is its adoption as the basis of clinical teaching. In other words, are we to attempt to maintain an active and progressive interest in the biological and physical sciences while the student is learning clinical medicine, or are we to concentrate on teaching the interpretation of symptoms in physiological and psychological terms? The former course would certainly seem to invite producing neither a good scientist nor a good doctor, for experience suggests that no one could satisfactorily carry out two such exacting disciplines at the same time. During the years in hospital it will take the student all his time to learn the grammar of clinical science, the applications of statistics, and the appreciation of the psychological factors in illness.

These thoughts have been stimulated by the publication by Sir Thomas Lewis of a book on *Exercises in Human Physiology*.[3] This book is based on the belief that just as the student has class exercises in physics or biochemistry so he should have class exercises in clinical science. Sir Thomas disarms criticism by not attempting to cover the whole field. The exercises are in fact based on his own work and deal mainly with the study of the circulation, the reactions of the skin, and the investigation of pain. A book by Sir Thomas Lewis is always a major event, and this one is especially important because it gives form to the vague idea of the inculcation of methods and principles, and it projects a bridge between the pre-clinical and clinical studies. Such a course would almost certainly require the help of clinical teachers, and this would ensure

[1] *Endocrinology*, 1943, **32**, 185.
[2] *Clinical Science*, 1944, **5**, 51.
[3] *Exercises in Human Physiology*, Macmillan, London, 1945. (3s. 6d.

that the bridge between physiology and medicine was open to traffic. Only practical experience can show whether such a course would arouse the interest of the student and whether the gap between these exercises and the examination of patients was narrow enough for the transfer of skill and principles. The difficulties in the physiological approach to medicine are twofold. Only a proportion of signs and symptoms can be analysed physiologically, and those are often the gravest ones. It may be a fascinating exercise to classify different varieties of leukaemia or to analyse the symptoms of terminal heart failure in hypertension, but the student often finds it unreal and lacking in humanity. The second reason is that many of the commonest symptoms, particularly in the gastro-intestinal tract, are better analysed in psychological than in physiological terms; the organ's specific function is being used to express a tendency of psychic direction.[4] Nevertheless in a synthesized course of teaching it will probably be wisest for the student to begin with the physiological analysis of isolated symptoms, to proceed to the examination of systems and the consideration of the effects of disturbance of the function of organs, and to arrive finally at the study of the patient as a complete and sentient being. Sir Thomas Lewis has given the lead in the devising of such a course, and it remains for others to develop and expand it.

HEALTH OF NEW YORK IN 1944

The review of the vital statistics of New York City by the Health Commissioner shows some interesting contrasts. The birth rate at 16.0 per 1,000 was 1.6 and 1.4 below the high levels of 1943 and 1942, but with these exceptions it was the highest rate since 1931. For the second consecutive year there was a rise in infant mortality, the rates for 1942–4 being 28.8, 30.2, and 31.2. Practically the whole of the increase occurred during the first month of life, and mainly between the ages of 10 days and 1 month, the causes responsible being diarrhoea and congenital malformations. The maternal mortality rate, at 1.8 per 1,000 live births, was the lowest ever recorded, and about one-third of the rate prevailing ten to fifteen years earlier. Another "all-time low" was provided by the small number of 242 cases of diphtheria during the year, with 7 deaths. The falling incidence of this disease may be justly attributed to widespread immunization. During 1910–19 the average number of cases was 14,282, with 1,290 deaths. From 1920 to 1929 the averages improved to 10,685 cases and 704 deaths. Notifications of whooping-cough at 2,809 cases and 34 deaths showed a fall of 25% from the low level of 1943 and reached the lowest figures yet recorded. It is not stated whether and on what scale whooping-cough vaccine was used prophylactically. Measles was slightly more prevalent than in the previous year, there being 21 deaths. At the beginning of the year the Health Department made available a certain amount of gamma globulin for infants and debilitated children exposed to measles. The incidence of scarlet fever was about 10% below that of 1943 but 20% higher than in the two previous years; 8 deaths were recorded. In common with many other areas of the U.S.A. there was a large outbreak of poliomyelitis in New York City, with 1,907 cases and 102 deaths. This was the largest number of deaths from poliomyelitis since 1931, when 504 patients died and 4,138 cases were notified. The other large recent outbreak was in 1935, with 2,054 cases and 91 deaths. The incidence of meningococcal meningitis, which rose to a high level in 1943, fell, but was still higher than in any other year since 1905. The numbers of cases for 1940–4 were 48, 118, 411, 1,406, 1,115. Deaths for 1944 numbered 195, giving a case fatality rate of 17%, compared with 50% a few years earlier before the introduction of chemotherapy. Notifications of typhoid fever remained at the same level as in 1942 and 1943, but the deaths rose from 5 to 14. The mortality from tuberculosis has never been so low before, the rates per 100,000 being 46.0 for all forms and 42.3 for pulmonary tuberculosis; but these figures do not represent the total mortality, as some 500 deaths of city residents occurred outside the boundaries of New York and are not included.

New low records were reached in the mortality from appendicitis, accidents, and suicide, with rates per 100,000 of 5.1, 45.7, and 9.2 respectively. The death rate from diabetes, which had risen from 25.7 in 1930 to 42.8 in 1943, fell to 40.8 per 100,000. The death rate from cancer—177.2—was the highest ever recorded. Improved diagnostic techniques and the ageing of the population are important factors in the rising trend of mortality from this disease, which has increased by over 50% during the past fifteen years; but there has probably been a real increase in cancer. Mortality from cardiovascular-renal diseases—495.1 per 100,000—was lower than in 1943, but otherwise it was the highest on record. The death rate of pneumonia at 45.2 was below that of 1943 but above the rates of 1941 and 1942. The cumulative effect of the varying mortality trends was to yield a total death rate of 10.3 per 1,000—0.6 below that of 1943, but with this exception the highest rate since 1937.

In the campaign against tuberculosis the Health Department introduced for the first time a tuberculin-testing of pupils in vocational high schools. The positive reactors—19% of the 11,950 tuberculin-tested students—were then examined by *x* rays, and 27 were found to have tuberculosis. All school-teachers and school employees are to be *x*-rayed. So far 3,000 persons in private schools have been examined, and arrangements have been completed to deal with the public and parochial schools. Since Pearl Harbour the increase in venereal disease has caused the authorities anxiety. The brunt of this falls on the 15-to-19-year-olds, in whom early infectious syphilis was 204% higher than in 1941 and 31% higher than in 1943. The incidence of early gonorrhoea has also steadily increased. A new treatment centre was opened during the year, making twenty in all. These clinics dealt during 1944 with 68,000 patients. Because of the extent of the problem special efforts were made to obtain the co-operation of parents, teachers, and clergy in the various antivenereal campaigns. In view of the large outbreaks of paratyphoid in England and Wales in the early years of the war, and

[4] Vorhaus, M. G., and Orgel, S. Z., *J. Amer. med. Ass.*, 1944, **126**, 225.

of the present very high level of dysentery in this country, the lectures and demonstrations arranged by the Health Board in New York for the numerous wartime restaurant workers are interesting. These covered "personal hygiene," "proper methods of food handling," and "restaurant sanitation," and were attended by over 2,000 workers. The department condemned almost 2,000,000 lb. of food as unfit for human consumption; perhaps the food situation in America allows of a higher standard than was possible in this country. An epidemic of rabies broke out in the spring, and a total of 34 dogs and 1 cat were affected during the year. One human case, which was fatal, resulted from a dog-bite. Over 27,000 dog-bites were reported to the Health Department—an increase of 4,000 on the previous year.

These are just some of the points of interest from the annual record of health and disease of one of the most important cities in the world, and once again we can only admire the promptitude with which the Health Commissioner gives an account of his stewardship for the year that is past. One impression that comes from perusal of these records is that the Americans are very much more "health-conscious" than we are, and that the American public responds much more readily to the ideas of preventive medicine put before them by an alert public health service. Perhaps it is that the American layman looks up to his doctor as a scientific technician who may be expected to know his own job. The British doctor does not seem to have the same prestige with the British public.

TOXICOLOGY OF D.D.T.

The new insecticide D.D.T. (2, 2, *bis*(*p*-chlorphenyl)1, 1, 1-trichlorethane) promises to be valuable in many fields. A knowledge of its toxicity to vertebrates and the probable hazard to man is most important. A number of independent toxicological investigations have been made, and the results of some of them are in print. A curiously common omission is the absence of statements about the purity of the D.D.T. used; commercial grades may contain anything up to 30% of impurities.

All investigators agree that D.D.T. is unlikely to cause dermatitis. In solid form it is not irritating to the skin, and even in strong solutions it produced only mild erythema in rabbits and nothing in man.[1] Absorption of D.D.T. through the intact or abraded skin of animals is very slight when the drug is applied as a dust (either neat or at 10% dilution). In various bland solvents, however, it is gradually absorbed and may cause intoxication. Even so, the acute lethal dose is high: D.D.T. dissolved at 10% in corn oil and applied in continuous contact under a rubber "cuff" failed to elicit symptoms in rabbits even at a dose of 940 mg. D.D.T. per kg. Solutions of 30% D.D.T. in dimethyl or dibutyl phthalate, however, brought on acute symptoms, but not death, at doses of 2–3 g. per kg. Daily repeated inunctions of these strong solutions were harmless to dogs (90 days), but killed rats, rabbits, and guinea-pigs after 5 to 10 applications of 4 c.cm. per kg. Smaller quantities (down to 0.5 c.cm.) produced chronic symptoms and often death after about 30 doses. Other workers[2] found D.D.T. more toxic; they report death of rabbits after about 20 daily applications of 50 mg. of D.D.T. per kg., dissolved in olive oil.

With regard to poisoning by mouth, there is again a big difference between solid D.D.T. (dispersed in mucilage) and D.D.T. dissolved in vegetable oils. The dangerous doses are much higher with the solid drug, presumably because of its non-absorption. With D.D.T. dissolved in oil, median lethal doses of from 150 to 750 mg. per kg. were found for small laboratory animals.[2,3] Goldfish have been killed by even lower doses (63–200 mg. per kg.) in oil solution.[4] The lethal action is erratic, which makes the precise limits of toxicity difficult to define. Chronic intoxication follows the addition of about 0.1% D.D.T. to the diet of small mammals and birds and may lead to death in a month or so.[2,3]

The symptoms of D.D.T. poisoning are hyperexcitability and tremors, followed by depression and finally death. If the toxicant is removed at the stage of tremors, recovery ensues. With chronic poisoning there is loss of appetite and consequent emaciation, with increased susceptibility to various infections (which were often the final cause of death in the experiments). Post-mortem examination of intoxicated animals[5,6] revealed little effect on the nervous system, despite the nervous symptoms. Most degeneration occurred in the liver after chronic poisoning. These toxicological findings are valuable in determining toxic limits and in indicating the most dangerous vehicles of D.D.T. But it must be remembered that the doses employed are very large compared with those likely to be encountered in practice. If it is agreed that the most dangerous form is an oil solution it is reassuring to calculate that a 70-kg. man would have to drink 200 c.cm. of a saturated solution in kerosene or 2 litres of a 0.5% fly spray in order to swallow the equivalent of the most cautious of the estimated lethal doses for small mammals (in this calculation the toxicity of the solvents is ignored). In the form in which D.D.T. would be met with by most people (as a dry powder or a crystalline deposit) it is practically harmless unless eaten regularly in small quantities. Despite the large quantities that have been manufactured during the past two years and distributed to the Services, and the continuous work on the stuff in numerous laboratories, we know of no case of human intoxication.

[1] Draize, J. H., Nelson, A., and Calvery, H. O., *J. Pharm. exp. Therap.*, 1944, **82**, 159.
[2] Smith, M. I., and Stohlman, E. F., *Publ. Hlth. Rep. Wash.*, 1944, **59**, 984.
[3] Woodward, G., Nelson, A., and Calvery, H. O., *J. Pharm. exp. Therap.*, 1944, **82**, 152.
[4] Ellis, M. M., Westfall, B., and Ellis, M. D., *Science*, 1944, **100**, 477.
[5] Lillie, R. D., and Smith, M. I., *Publ. Hlth. Rep. Wash.*, 1944, **59**, 979.
[6] *Publ. Hlth. Rep. Wash.*, 1943, **58**, 1729.

"ASIATICOCIDE" IN TREATMENT OF LEPROSY

The substitution of injections of soluble products of the fatty acids of chaulmoogra and hydnocarpus oils for the oral administration of the nauseating oils themselves marked an advance in the treatment of leprosy, in spite of its failure in advanced cases and its smaller efficacy in the infective lepromatous form of the disease. A sulphonamide preparation, promin, has recently been reported by Faget *et al.*[6] to have given promising results by intravenous use over a period of two years. The discovery of a more effective curative remedy in all stages of the disease will greatly facilitate the reduction, and eventual eradication of this ancient and justly dreaded scourge.

We have received, through the courtesy of the French Embassy in London, a copy of a dispatch from Madagascar giving a preliminary account of the discovery of a new remedy which is reported to have given remarkable results in the treatment of advanced lepromatous cases of leprosy. In 1937 Drs. Boiteau and Grimes extracted a new glucoside from an umbelliferous plant growing

Madagascar called *Hydrocotyle asiatica*, which in doses near a toxic level gave encouraging results in leprosy. In 1938 Bontemps, working in the leprosy laboratory at Antananarivo, discovered a new glucoside, which he called "asiaticocide," which was much less toxic; but it was insoluble in water, slightly soluble in alcohol, and very soluble in pyridine. By further research Boiteau succeeded in obtaining a solution suitable for injection. Devanne and Razafimahery in their turn have ascertained the chemical nature of "asiaticocide," and Boiteau and Grimes are of the opinion that it acts as a solvent of the waxy coating of the bacillus of leprosy, which then becomes very fragile and may easily be destroyed by the tissues or by an adjuvant drug. In this connexion it may be recalled that in 1923 Leonard Rogers[7] recorded a note on the defatting action of injections of chaulmoogrates and morrhuates on the bacilli of leprosy and tuberculosis, based on estimates of the lipase in the blood of patients before and after treatment. The results now reported from trials of the new glucoside include softening, breaking down of nodules, followed by cicatrization. Healing of whitlows and perforating ulcers and gradual improvement of anaesthesia and muscular atrophy are also said to occur. Still more remarkable is the claim that eye lesions are rapidly cured if treated before the posterior chamber is involved. It has not yet proved possible to prepare large quantities of the new remedy for extensive trials, and in view of the many disappointments of recent years full reports of trials already carried out and their confirmation by other workers must be awaited. The most hopeful features of the present account of the work is the success in breaking down leprosy nodules, and still more the clearing up of the hitherto intractable eye lesions.

SCOTTISH INFLUENCE ON CANADIAN MEDICINE

Dr. D. E. A. Cleveland of Vancouver contributes to the January number of the *Canadian Medical Association Journal* an interesting paper on Canadian medicine and its debt to Scotland. The first name he mentions is that of William Cullen (1712–90), pupil at Edinburgh of Alexander Monro *primus*. Cullen was instrumental in founding the Medical School of Glasgow, and during his long life held the chair of medicine both in Glasgow and in Edinburgh. Dr. Cleveland recalls that it was in Edinburgh that the modern conception of medical education first developed and flourished and a generation of great teachers grew up there, led by Cullen, who was one of the first to give clinical lectures in Great Britain. "The essence of the Edinburgh method was the teaching of students at the bedside in hospitals directly connected with the medical school. . . . The influence of Scottish medicine appeared on the Canadian scene as the eighteenth century was entering its second half. Many Scots came to Canada after the conquest to engage in medical practice, and soon many Canadians were going to Scotland for their medical training . . . the name of Edinburgh and Scotland became synonymous in the medical relationships of Canada. Not a few of the men who represented Scotland and Scottish medical training in Canada are prominent, not only in the medical history of Canada but in the record of public life in Canada." The names of Adam Mabane, Andrew Fernando Holmes, and John Stephenson are identified above all others with the beginnings of medical education in Canada. As a result of the energetic action of Holmes and Stephenson the Montreal Medical Institute grew out of the Montreal General Hospital. In Montreal at that time there was the anomaly of a medical school which actively taught but could confer no degrees and a university which could confer degrees but had done no teaching. James McGill was a wealthy Montreal merchant and a native of Glasgow, where he had attended the university. McGill College (later McGill University), so named in recognition of his bequest, had its actual beginnings as a functioning organization in a medical school, with its first teaching faculty composed entirely of Edinburgh medical graduates. But the Edinburgh tradition did not find its sole repository in McGill, for Scottish medicine played a large and important part in the establishment of hospitals and medical schools in Quebec among Canadians of French origin and speech. Scottish nationality and teaching, predominantly of the Edinburgh flavour, entered richly into the medical endowment of other parts of Canada also. About a hundred years ago 6 of the 28 practitioners in Toronto and 13 of the 14 in Halifax had been trained in Edinburgh.

[7] *British Medical Journal*, 1923, **2**, 11.

DOCTORS IN HOT PRINT

There is an idea in many lay minds that the doctor—or at least their doctor—is a man apart: a man leading a dedicated life and immune from the ordinary whims and passions of mankind. The compliment has some justification in fact. Good doctors, by the nature of their job, are working philanthropists and have to be more than tolerant of human weakness and vice and absurdity. But beneath that professional detachment and that kindly avoidance of individual censure there lurks a person with feelings and opinions of his own. The long day's work, the multiplicity of the claims upon time and thought, will keep them under, but they are not abolished. A small irritant may goad repressed emotions into violent activity. The history of medicine need not be combed out for examples beyond mentioning antiseptic surgery and anaesthesia in childbirth, and psycho-analysis and contraception in the last 30 or 40 years. Euthanasia was a private matter between the humane doctor and his tortured and doomed patient, but when it became a matter of open debate there was a temptation for doctors to become publicists. One function of a medical newspaper is to give a platform for the interchange of knowledge and opinion. Much of medical practice is concerned with unpleasant facts and with the problems of sexual behaviour, normal and abnormal. Doctors can't be squeamish. A medical editor might like to "keep his columns clean"; but there are many things—and one of them is artificial insemination—which must be discussed sooner or later. What we have to bear in mind—and risk the consequences—is that doctors are not only humane but human ("The maxim's tremendous but trite"). Scratch the professional surface and the man or woman may emerge in unexpected shape as a politician or a theologian. No unguarded phrase in letter or article will escape the watchful eye and eager pen of the enthusiast. The correspondence columns of this *Journal*, week by week, bear witness to that, and there are many other letters which do not appear in cold (or hot) print. We try to hold an even balance and to give every view a fair hearing: it is better to err on the side of free speech than to stifle discussion. But there are limits, not to editorial patience, which is theoretically inexhaustible, but to the patience of the general body of readers, and a time always comes when it is plain that a heated and inconclusive correspondence has run its full course and ought to be wound up before the antagonists have torn each other to pieces and all the quieter people are bored to death.

Reports of Societies

VETERINARY AND MEDICAL CONTROL OF MILK SUPPLY

A discussion on veterinary and medical control of the milk supply took place at a meeting of the Section of Comparative Medicine of the Royal Society of Medicine on Feb. 21. Dr. H. J. PARISH, president of the Section, was in the chair.

Limits of Supervision

Mr. H. T. MATTHEWS, superintendent inspector, Animal Health Division, Ministry of Agriculture, who said that his remarks were personal and not official, described the milk industry as undergoing a slow evolution. In spite of all difficulties, milk-producing farms were producing more milk than ever before and the public were consuming more. Over a ten-year period production was up by about one-third and liquid consumption by two-thirds. The idea that medicine or veterinary medicine, either or both, should control milk supply was reflected in legislation which was framed to prevent the sale of unsound milk, but owing to the fact that milk was an important food it had been customary to regard all stages in its preparation as falling within the medical province. This was carrying a reasonable principle to an absurdity. It was like asking the doctor to supervise the cornfield, the poultry farm, and the trawler. Many people would say that medical control of milk supply had failed to prove effective, but his point was that the word "control" was wrongly used. If veterinary surgeons had been placed in charge at the distributing end with authority to work all the way back to the farm it would have been more productive of all-round benefit, but it would still have been illogical. No scientist with his limited view-point could control from without.

Cattle diseases in terms of human risk had been virtually reduced to two—tuberculosis and brucella infection. Both these diseases were of such economic importance in agriculture that their control or elimination was called for quite apart from human health. Of the measures now in operation against bovine tuberculosis, routine herd examinations could not have a substantial effect on total incidence until conducted with greater regularity and frequency than present circumstances permitted. The more regular use of tuberculin was becoming established. Of the milk sold in England, that from attested and tuberculin-tested herds was approximately 8%, and the number of cattle in such herds was over 700,000 and was increasing. But he did not think that any great reduction in bovine tuberculosis was to be expected over a period of years. As for brucellosis, the recently introduced system of vaccination with the American strain of the organism was proving very popular, and it could not be long before there was a heavily vaccinated cow population. Nevertheless, the attack on both these diseases could not be pressed to its ultimate extent until the veterinary profession was recruited to greater strength. There was no good evidence that non-tuberculous mastitis in the cow contributed to human ill-health, while actinomycosis of the udder was a pathological curiosity, if it occurred at all. The new arrangement for the control of the milk supply which placed veterinary science at one end and medical at the other had much to recommend it, but there was need for an intermediate link, which was being provided by the milk testing and advisory service of the Ministry of Agriculture now being built up.

Medical Control

Dr. W. A. LETHEM, senior medical officer, Ministry of Health, said that for centuries local authorities had paid much more attention to prevention of adulteration of milk by water than to safeguarding milk from the health point of view. When, last century, attention was turned to health, the regulations were framed with a view to the elimination of bad smells, which were thought to be a cause of disease; hence rules were laid down for the position and construction of cowshed drains and so forth—provisions still incorporated in the Milk and Dairies Regulations. There were 1,500 local authorities interested in milk, and many a rural district council was expected to control 600 or 700 farms, so that it was not surprising that an overworked inspector paid more attention to structural matters, which were easily seen and supervised, than to methods of milking and handling. After the last war the mistaken assumption was made that cleanliness meant safety. The introduction of T.T. and pasteurized milk was a step in the right direction, but unfortunately a third class, Grade "A" (later "Accredited"), was included, which consequently was thought to be safer than ordinary milk; the cows from which this milk came, while subject to periodical clinical inspection, were not tuberculin-tested, the milk was no safer than ordinary raw milk, and was found for some reason to have a higher percentage of diseased samples. Milk from tuberculin-tested cows was on the whole free from tubercle bacilli, though not necessarily from the organisms of undulant fever or mastitis. If bottled on the farm, thus avoiding the risk of human infection at a later stage, it was known as "certified," but such milk was expensive and little of it was sold.

The public still had the mistaken idea that sampling for adulteration, with an occasional prosecution, indicated that their interests were being properly protected. The phosphatase test was the only really efficient test of pasteurization. There was no rapid test for pathogenic organisms. Under a defence regulation the Ministry of Food had power to specify areas in which only pasteurized or heat-treated milk, T.T. milk, or accredited milk might be sold. The only really safe milk was pasteurized or heat-treated (apart from dried or tinned), but Parliament had shown reluctance to make pasteurization compulsory. Medical examination and certification of milk handlers were impracticable, though a medical officer of health could prohibit the handling of milk by any person whom he suspected to be suffering from notifiable infectious disease. Medical officers of health were hampered by lack of adequate legal powers. They could stop the selling of milk which was believed to be infected with any human notifiable infectious disease, but not (except to a school under their own control) with tuberculosis, undulant fever, and mastitis, and it was not an offence to sell such milk, even knowing it to be infected. In such cases the medical officer of health simply notified the Ministry of Agriculture, which proceeded to trace and remove the cows at fault. When it was remembered that it took at least a month to test a sample—and that several biological tests were often necessary—it would be realized why it often took several months before the cow was discovered, during which time the milk continued to be sold. When the sample was from a bulked supply, drawn perhaps from several counties and dozens of farms, the search became almost an impossibility. Dr. Lethem mentioned an instance where three human cases of undulant fever were traced to the same T.T. producer-retailer, who refused to have his milk even temporarily pasteurized, and on whose farm, in spite of every effort by the Ministry of Agriculture, contagious abortion was rife.

A Producer's View

Mr. CLYDE HIGGS said that the first step in efficient control was a great improvement in the standard of livestock. He confessed himself not very happy about tuberculin-testing. He knew of cases of animals which were reactors at one time and non-reactors at another. Until recently he had been one of the crusaders for clean, raw milk. He had used the argument that if Nature had intended milk to be pasteurized she would have arranged that it came pasteurized from the cow. But he had now changed his mind as a result of various complaints, and had installed a pasteurization plant. He had no wish to improve bad milk by pasteurization, but he did want to make his good milk better still.

Dr. RICHARDS, agricultural bacteriologist, Reading University, referred to the unenlightened outlook of a proportion of operatives engaged in milk production. The gospel was not being got over to them. They were not hygienically minded or aseptically minded. He also criticized the decrepitude and squalor of many farm buildings. Without good structural arrangements, good supplies of water and the like, it was impossible to maintain normal hygiene and good husbandry. A good deal of the energy which the authorities directed to the upgrading of herds should be given to the upgrading of operatives and working conditions.

Finally, on this aspect of the discussion, Mr. J. L. DAVIES, of the Milk Marketing Board, declared that farmers in general

would subscribe to the opinions expressed in that meeting. The old debates on pasteurization were over. The desire for the elimination of animal disease and the improvement of the efficiency of herds was common ground. The trouble was that so many people seemed anxious to bring in more control and restriction and to make more difficulties for the milk producer. The matter was one, not for controversy, but for quiet co-operation between the medical and veterinary professions and the farmers.

The Powers of an M.O.H.

Dr. C. FRASER BROCKINGTON (Warwickshire) considered that much more attention should be paid to the epidemiological side of the problem. The practitioner of epidemiological science in a community was, of course, the medical officer of health, but a good deal could be done to strengthen his hands. It seemed to him that the milk operative should be a much more skilled craftsman. There should be registration of operatives. Every person engaged in any milk processing should be registered annually and undergo an annual bacteriological examination. It was, of course, true that a person might be certified free from infection on Dec. 31 and get Sonne dysentery on Jan. 1, but an annual examination would avoid a good many of the epidemics of typhoid fever which were caused by carriers. Perhaps even more important was the education, by film and otherwise, of operatives in the technique of hygiene. There was no reason why farm operatives should not be trained to be just as clean in their habits as nurses. If raw milk was sold he wanted the medical officer of health to have power to go to the farm and inspect it, with the right then and there to order the milk to be pasteurized or to stop the supply.

Other speakers on the veterinary side included Mr. H. W. STEELE-BODGER, who said that the only way to get clean milk of good quality produced in this country was by payment of bonus; Dr. W. R. WOOLDRIDGE, who said that the conditions for the production of safe milk would never be forthcoming unless the medical and the veterinary professions and the producers combined in an appeal to the Government to facilitate the necessary provisions for animal health, adequate water supply, electrical or other power on farms, and the various other services which were available to most of the community; Dr. J. T. EDWARDS, who commented on the shortage of local surveys; and Mr. STEWARD, who strongly urged a supplementary biological examination of milk, and declared that T.T. milk should also be abortus-free.

The PRESIDENT (Dr. Parish) asked whether it was too much to hope that after the war pasteurization would be made compulsory, and that in districts where pasteurizing plant was not at present available official intimation would be given to the public that milk must be boiled before its consumption was allowable.

Openers' Replies

Mr. H. T. MATTHEWS said that real control was coming from within. It should not be imposed from without upon the industry. The trouble at present was an over-diffused control. A recent survey had shown that in four adjoining counties there were as many as 348 persons who, by statute, should interest themselves in the milk supply. The result was that those who had the power did not exercise it because of their other multitudinous duties. If there were medical officers who thought that there was opposition to pasteurization from the veterinary angle they could be reassured. Pasteurization for the purpose of making milk safe was a medical problem, not an agricultural one. But it was well to remember the cost of pasteurization, which was something like twopence a gallon, or over ten million pounds a year.

Dr. LETHEM, also in reply, said that he did not know what new powers Dr. Brockington wanted. The medical officer had ample power to go on to the farm. It was the local authorities which had not sufficient power. They could follow back human cases when these occurred, but they had no power to follow back bad samples. He had been asked what powers the medical officer had to control milk intended for schools and for nursing mothers. No milk could be provided for schools unless the medical officer was satisfied that the milk was free from disease. The medical officer could, and in some cases did, prohibit the supply of milk to schools. There were schools to-day with no milk at all because the medical officer, rightly, had said that he was not satisfied. As for nursing mothers, there was nothing to compel them to drink a particular kind of milk, although if they went to maternity centres—and the same applied to antenatal centres—they would find the issue of milk to such centres controlled, and it was the medical officer of health's duty to decide whether or not to certify.

HEALTH OF FRENCH CHILDREN DURING AND AFTER THE OCCUPATION

A meeting of the Section of Disease in Children of the Royal Society of Medicine was held on Feb. 21, Dr. HELEN MACKAY presiding, at which statements were made on the condition of children in the recently occupied countries of Europe.

Dr. ROBERT DEBRÉ, professor of paediatrics in Paris, an honorary member of the Section, who was in France during the whole of the occupation, gave an account of the condition of French children. He described the calamitous results immediately following the breakdown of France in 1940 and the long-continued deprivation of food by reason of the requirements of the invader, the requisitioning of transport during the occupation, and the lack of sea-borne food owing to the Allied blockade.

The result upon the health of the children was reflected in various statistics. The weight of newborn babies at the Bordeaux maternity centre during 1941–2 showed a fall from the average, but in 1943, thanks to an improved diet for pregnant women, the birth weights returned to normal. He gave the following table for the birth weights taken at the St. Louis Maternity Centre, Paris, comparing a pre-war year with two war years:

Birth Weights

	No. of Births	Under 4 lb.	%	4–6 lb.	%	6–7 lb.	%	7–8 lb.	%	Over 8 lb.	%
1935 ..	2,289	85	3·8	553	24·4	914	40	557	24·4	180	7·8
1942 ..	1,878	91	4·8	540	29·4	750	40	401	21	96	5·1
1944 ..	1,984	76	3·8	564	28·6	820	39	420	21	104	5·5

One effect of the shortage of milk supply was an increase in the number of nursing mothers. In one Paris district 90% of the mothers nursed their babies, compared with 38% before the war. According to one survey the mother's milk had roughly the same food value as before except for a slight diminution in phosphorus. After six months, however, it was usual for these under-nourished mothers to be unable to continue feeding their babies. A noteworthy increase of haemorrhages of the newborn had been ascribed to insufficiency of prothrombin, due to lack of vitamin K.

Children's Rations

The rations established in 1941 for children up to 3 years of age were approximately adequate, or at least sufficient to prevent loss of weight, though the milk situation was difficult; what was known as whole milk was actually skimmed milk, leaving only 30% fat. Rations for children from 3 to 6 were also roughly equal to the minimum necessary, but the rations for children from 6 to 13 were well below the minimum, and a boy of 18, requiring 2,400 calories a day, was allowed only 1,600. Shortage of fats and animal protein was the most unfortunate feature of the children's rations, which in January of this year became even worse, the effect of war operations in the rural districts of France preventing the town populations from receiving country supplies. He added that until the "liberation" the food changes did not affect equally all parts of France, and rural areas like Normandy, Picardy, and Brittany were spared undernourishment, so that when last year the Allied armies entered these regions the signs of lack of food were not apparent. Indeed, the distribution of synthetic vitamins to children, at least in the Paris district, had prevented the worst effects of vitamin deficiencies. Working in a large children's hospital in Paris he had not noticed any increase in rickets, and scurvy was as rare as it was before the war. In less favoured regions, however, such as Marseilles, the picture was different. There a systematic survey of children up to 3 years of age showed

clinical signs of vitamin D shortage in 54%. Since the "liberation" the food situation, instead of improving, had grown worse. It was difficult to obtain supplies of meat, vegetables, fruit, and eggs, while milk for children over 1 year was no longer allowed.

A comparison of the weights of 23,000 children in the Seine district over a period of six months in 1941–2, compared with the pre-war average, showed that 65% during those six months had increased by from 2 to 3 lb., whereas before the war the increase was from 3 to 8 lb.; 22.8% had not put on any weight at all; and 12% had lost from 1 to 3 lb. in weight. The children of from 14 to 18 had mostly lost weight. The National Department of Statistics had published the results of school medical examinations of 23,444 children, and these showed a very general decrease in weight of from 2 to 14 lb., according to age, as compared with the average weights in 1938.

Among infants gastro-enteritis, caused by impure milk, had been more frequent than before the war, especially in Southern France and Marseilles. In older children and adults an increased amount of dyspepsia was found, due to too much roughage. The seasonal incidence of diphtheria and typhoid had sharply increased, and while there had been no influenza epidemic, there had been much bronchitis and pneumonia.

Tuberculosis Rates

The most serious problem, however, had been the increase in tuberculosis. There had been an increase in tuberculosis mortality of 11% in 1943 as compared with the average of the years 1935–8. In some counties the increase had been enormous—in Bouches-du-Rhone, which included Marseilles, 74%, and in the Var, which included Toulon, 69%. He showed the following table of the death rate from tuberculosis (all forms) per 100,000 inhabitants in two regions, comparing the figures for 1943 with those for a pre-war year:

Age	Paris Region		Eastern Region	
	1936	1943	1936	1943
4 and under ..	78·7	93·0	34·0	55·6
5–9	36·5	37·1	21·0	36·4
10 14	35·7	47·7	27·9	42·2
15–19	125·0	130·0	91·7	103·0
20–24	178·0	277·0	136·0	166·0

In conclusion Prof. Debré wished he could state that things were now better, but that was not so. The milk supply in the large towns in the Mediterranean districts had never been so bad. There was no improvement so far as meat and fats were concerned. Many fears were entertained as to what would happen when the prisoners-of-war and deportees, large numbers of whom were known to be tuberculous, returned, and also as to the future of the devastated districts. On the other hand, the birth rate was rising. In 1943 it was 159 per 10,000 inhabitants, compared with 145 in 1938.

At the same meeting a report of an interim character, not yet available for publication, was given on the condition of children in Belgium. Dr. A. CAWADIAS, as head of the Greek Red Cross, gave an account of the very serious position in Greece. He said that the last report he had received showed enormous increases in the incidence of tuberculosis and of nutritional deficiency diseases. Greece was receiving only 29% of the required calories.

Dr. HELEN MACKAY from the chair said she hoped that public opinion would be aroused to hasten the necessary measures of relief to these afflicted countries. She felt convinced that adults in Great Britain would willingly accept a cut in their rations if it would benefit the children of Europe.

The Council of the Incorporated Association of Hospital Administrators (12, Grosvenor Crescent, London, S.W.1) announces that, by special resolution of the members, the name of the association has now been changed to the Institute of Hospital Administrators. At the time of the fusion in 1942 of the two old-established organizations, the Hospital Officers Association and the Clerks and Stewards Association, with a view to the formation of a single professional institute, all were agreed—as first choice—on the name now adopted, the less suitable title being taken only because legal difficulties, now overcome, prevented the immediate adoption of the more appropriate name.

Correspondence

Gas Gangrene after Secondary Suture of Thigh Wound

SIR,—Mr. J. Hamilton Barclay's case of gas gangrene following secondary suture (Feb. 17, p. 218) interested me greatly. I agree that surgical progress is encouraged more by a record and analysis of our failures than of our successes, but I fear that the conclusions and impressions I draw from the case are not the same as his.

In the first place I cannot refrain from commenting on the primary treatment of the wound before it came under Mr. Barclay's care. It is indeed distressing that at a C.C.S. in the fifth year of the war a large shell wound of the muscles should be considered "not suitable for surgical treatment," and to require nothing more than local "sulphanilamide powder and vaselined gauze." That this was a recent wound, that it was contaminated with soil and was in a known gas-gangrene "danger zone" (the thigh) merely aggravate the case. In my opinion all the subsequent disasters can be traced directly to this initial failure to incise, explore, and excise the wound.

It is not surprising that the wound was dirty and greenish six days later when it came under Mr. Barclay's care. The subsequent chemotherapy improved the surface of the wound, but without doubt there was dead muscle deeper down, and the gas gangrene flared up when the wound was closed by suture. The subsequent response to treatment emphasizes this point. In spite of intensive chemotherapy and multiple incisions, the infection persisted until Aug. 25, when a large slough was removed; thereafter the patient improved rapidly. It is reasonable to suppose that his progress would have been more uneventful if the devitalized tissues had been excised before infection had become established.

Mr. Barclay draws the conclusion that this case "emphasizes the necessity for taking swabs not only from the surface but from the recesses of the wound" and gives his opinion that the organisms (of gas gangrene) had been lurking just beneath the surface. I agree that the organisms were beneath the surface, but they were not in healthy tissues; they were in dead or devitalized tissues, and it is these which constitute the real problem of wound treatment. No bacteriological investigation, in my opinion, can replace surgical exploration, and no war wound should be sutured unless at some stage, early or late, it has been explored and all devitalized and dead tissue removed. The one great lesson to be learned from this case is that there is no substitute for adequate surgical treatment of a war wound. Any attempt to *replace* surgery by chemotherapy and bacteriology must lead to disaster.

The recovery of the patient from a condition so desperate is indeed a tribute to Mr. Barclay's untiring efforts, and he should be congratulated.—I am, etc.,

Oxford. J. TRUETA.

Osteomyelitis after Bone-marrow Transfusion

SIR,—In their article on tibial bone-marrow transfusions (Feb. 17, p. 220) Drs. F. W. Gunz and R. F. A. Dean appear to assume that the occurrence of osteomyelitis must be due to the introduction of sepsis by the operator. I do not think this assumption is quite justified, and for the following reason.

Over the past two and a half years in the course of upwards of 130 marrow transfusions I have encountered osteomyelitis in five cases. But over the same period and out of about 100 cases similar in type I have also seen it five times in patients who had received parenteral fluid only by some other route (subcutaneous 1, intravenous 4), the difference between the two sets being that in the marrow cases the osteomyelitis occurred always at the site of the needle puncture, whereas in the others it was not confined to the tibia (mandible, humerus, femur, radius, tibia). This last case is of interest, for had Gimson's needle been employed it would have been unjustly blamed. The infant in question received three intravenous perfusions, but the gastro-enteritis was only completely checked when pus began to accumulate in the knee-joint, the baby then becoming

constipated (a teaser for those who hold that gastro-enteritis may be caused by concealed focal sepsis). *Staph. aureus* was grown from the pus.

Is it not then likely that whereas the site of an osteomyelitis will be determined by the trauma of the medullary needle the fact of its occurrence at all is due to bacteria already in the blood stream looking for a suitable nidus? I have had the opportunity of discussing these events with an orthopaedic surgeon of wide experience, who tells me he has seen a number of cases of spontaneous osteomyelitis in infants recently and considers the disease to be on the increase. Putting these facts together I think it likely that staphylococcal septicaemia, either as cause or complication of infantile gastro-enteritis, is commoner than is generally recognized, the trouble being that *Staph. aureus* is such a vulgar creature that when found in culture he is apt to be called a contamination rather than recognized as a pathogen; and clearly many cases will not determine as osteomyelitis, pyo-arthrosis, etc., since babies are poor hands at making pus. There is one other point: if you are to have an osteomyelitis it seems better to have it in a bone already drilled for drainage. Three of my five cases recovered with only minor surgery.

I doubt whether wearing gloves does much to prevent sepsis. The (Gimson's) needle need not and should not be touched by the hand of the introducer at all. I think the danger lies in the later stages, when a faulty connexion may tempt unsterile fingers to fiddle with it.—I am, etc.,

The Grove Hospital, London, S.W.17. JOS. B. ELLISON.

Nutrition at Home and Abroad

SIR,—I have read the leading article on the above matter (Feb. 17, p. 227) and I must say I find nothing to criticize in the conclusion you quote as expressed by Dr. Magee and the *Times*.

In my own small town I have been keeping close watch on the condition of children of all ages. In 1941 I confess I was alarmed at the condition of the school-children, whose rate of growth and physical efficiency (as judged by performance tests) were significantly lower than the pre-war level, but we all know now that in 1940 and early 1941, owing to the submarine blockade, Great Britain was in a precarious condition as regards food, especially those foods containing first-class protein.[1] In late 1942 and early 1943 the rates of growth in weight and height regained pre-war levels, though strength and endurance lagged behind.[2] Later these also regained reasonable levels.

Regarding younger children, an investigation was made by Dr. Lewis Faning and myself[3] of the rate of growth of children under 1 year between July, 1940, and July, 1942; note the former date especially, for it denotes that part of the time covered by this investigation was one of the worst in the war for food sufficiency, yet in this period, owing, I believe, to definite steps taken by the Government to provide milk and vitamins for expectant mothers and infants, these babies did not fare as badly, for we found as follows. The average weight and length and the rate of growth in respect of both those indices were compared as regards children attending clinics in Glossop in the two periods 1933–6 and 1940–2. There was sharp differentiation between the findings for the two sexes. Males in the second or war period, in the early weeks of life, on the average weighed less and measured less than those in the first or pre-war period. But the average rate of growth for the 1940–2 series was the faster, particularly as regards weight, so that not only were they heavier and longer than the pre-war group at the end of the first year of life, but the average of all weighings over the whole year of life was significantly higher by 0.17 ± 0.07 lb. Females, on the other hand, showed no difference between the two series as regards average rate of growth or in weight. But in average length there was a significant difference of 0.35 ± 0.07 in. in favour of the 1940–2 series.

Recently I have just been making comparisons between the heights and weights of school-children in 1934 in the piping times of peace and in 1944 during the stress of war (when the Government arranged a fair distribution of all available food). I find as follows. In weight girls of 11 years were up to pre-war standard while girls of 12 and 13 years were significantly better than the pre-war standard. Boys of 10 and 11 (taken together) were above the pre-war standard, boys of 12 years, 13 years, and 14 years were also all significantly better than the pre-war standard. The average mean weight of the boys of 12 was 4 lb. more than their pre-war brethren, the boys of 13 almost 5 lb. more, and the boys of 14 about 8 lb. heavier!

The data given (and not of a clinical nature) so far as it goes would seem to verify the assessments of surveys made and mentioned in the *Journal*. I have never been very much in favour of clinical assessment alone for the nutritional state, but I have reason to believe that with experienced workers it can be valuable, though confirmation by more objective measures is desirable. If the *Journal* cared to give me space I could enlarge on this matter and also, I think, make some very definite suggestions based on some experiment for the improvement of any adverse nutritional condition of children which the leader writer seems to imply is now existent in Britain.—I am, etc.,

Glossop. E. H. M. MILLIGAN, M.D., D.P.H.

SIR,—In your leader on this subject (Feb. 17, p. 227) you state: "The question of the relief of Europe is critical." Yes; because (to quote Charlotte Brontë) "misery generates hate," and we British, who have more food, fuel, and clothes, will be blamed if we do not insist that a fair share of these shall be distributed to the "liberated areas."

The military authorities have not organized any nutritional teams, and psychologically it is very difficult for them to turn their minds to such projects. U.N.R.R.A. has not been allowed to function in Greece, Belgium, or France, and cannot function unless it is invited to do so. The supply of food, railway engines, and motor lorries to France, for instance, is a question of priorities. No one wants to prolong the war, but since no one can promise that it will be won in time to gather this year's harvest in Western Europe, we must not lose the peace in our fear of prolonging the war.

On doctors, who know how necessary food is, rests a special responsibility to use whatever political influence they have for the sake of a decent Europe and for the sake of our colleagues abroad, who bear a much heavier load of frustration than we while they watch their patients die of undernourishment.—I am, etc.,

West Kirby, Cheshire. CHARLES BRUNTON.

Haemolytic Disease with Incomplete Rhesus Antibody

SIR,—The discovery by Race in this country and Wiener in America of an "incomplete" or "blocking" Rh antibody was the subject of a recent note in your columns by Race and Taylor (Dec. 9, 1944, p. 756), who described Wiener's technique for detecting the antibody. It may be of interest to draw attention to a case of haemolytic disease originally observed 18 months ago and recently reinvestigated by this technique.

The affected child was the second pregnancy, the first child having been normal. The blood groups were: mother, B, Rh-negative, St-positive, MN; child, A, Rh-positive, St-positive, MN (MN groups were kindly determined by Dr. G. L. Taylor). The mother's serum was examined on several occasions after delivery and no satisfactory evidence of an Rh antibody was found. Using 26 group "O" bloods very doubtful reactions were observed with 2 only (both Rh-positive). Dr. G. L. Taylor, who also examined the serum at this time for Rh antibody, obtained similar results and doubted the specificity of the reactions.

As serological evidence of Rh iso-immunization was lacking it was thought possible that the responsible haemolytic antibody might be maternal anti-A augmented through iso-immunization by the foetal A antigen. When the mother's serum was titrated anti-A was found in great strength (titre, 10,000 for A_1 cells), and it was concluded that iso-immunization by foetal A antigen had occurred. Confirmation of this iso-immunization has now been obtained by examining a recent specimen of the mother's serum and finding that the anti-A titre is now only 1 in 128. Wiener, however, has suggested that when the antigens A or B are abundantly present in the foetal body fluids (these children are salivary "secretors") the foetus is protected from haemolytic disease due to the corresponding antibodies, since these are

[1] *Food Consumption Levels*, H.M. Stationery Office, 1944.
[2] Annual Report S.M.O., Glossop, 1943.
[3] *Med. Off.*, Jan. 8, 15, and 22 1944.

absorbed by the plentiful foetal antigen without damage to the erythrocytes. The child's saliva was therefore examined and A antigen found in strength; the antigen was also readily demonstrable in the child's serum.

The position then was this. Iso-immunization by foetal A antigen had occurred, but since the child was a secretor it was, on Wiener's hypothesis, immune to haemolytic disease from anti-A; Rh iso-immunization, though possible, lacked confirmation.

I have now re-examined the original serum by Wiener's technique, and the presence in it of an incomplete Rh antibody capable of inhibiting the agglutination of Rh-positive cells (Rh_2Rh_2 or Rh_2rh) by a standard Rh serum has been demonstrated; the incomplete antibody is still demonstrable in the recently obtained sample of the mother's serum. From this it is clear that Rh iso-immunization did in fact occur, and it seems probable that Rh antibody was responsible for the haemolytic disease. It is at any rate unnecessary to suppose that haemolytic disease due to anti-A occurred in a secretor contrary to Wiener's hypothesis.—I am, etc.,

Pathological Department, North Staffordshire Royal Infirmary. A. J. McCALL.

Climate and Mortality from Burns

SIR,—The article on "Some Social Aspects of Burns in Glasgow" by Drs. Brown, Lewis-Faning, and Whittet (Feb. 3, p. 144) brings out a remarkable point—viz., that the mortality from burns is lower in England and Wales than it is in Scotland. Can this difference in mortality be due to the higher temperature of the air in the southern countries, perhaps minimizing shock, which is the chief cause of death? It may be of interest to record that in Singapore, where the air temperature ranges between 72°F. and 92°F. the whole year, fatalities from scalds and burns occur seldom, even when the lesions are extensive, and deaths are noticeably much rarer there than in Britain.—I am, etc.,

London, S.W.1. KENNETH BLACK, Ex-Professor of Surgery, Singapore.

The Prophylaxis of Trench Foot

SIR,—In your issue of Feb. 24 (p. 270) there appeared an article on this subject by Dr. Raymond Greene. In his second paragraph he makes clear that his article is "a summary of the teaching which has been given to a large number of medical officers of the three Services in the war medicine courses at the British Postgraduate Medical School of the University of London." As a regimental M.O. on active service on the Western Front during the war of 1914–18 I experienced the difficulties associated with this problem; and, in view of the somewhat novel nature of some of the teaching in Dr. Greene's article and its apparent impracticability under active service conditions, one naturally wonders to what extent the three Services and the British Postgraduate Medical School are associated with, and responsible for, the views expressed.

For instance, what evidence (if any) is there for this introductory statement: "It is the army in retreat, low in morale and with its communications in disorder, that suffers most severely"? And how is that statement to be correlated with the recent incidence of "trench foot" among our troops serving on the Western Front?

After stating that "it is the duty of the medical officer to see to it that his brother officers understand the reasons for the rules, and are continuously alert for breaches of them," the author proceeds to make the following surprising statement: "The man who breaks the rules and gets away with it is not a hero but a lucky fool. Moreover, he is a stumbling-block to those who are less well adapted, and he should be treated as a criminal." These are indeed strong words, and one must assume that the writer has given serious consideration to their meaning and implication before they were penned. Are we to assume that this statement has been made with the approval of the three fighting Services and the British Postgraduate Medical School?

But what are these "rules" which may mean so much to sailors, soldiers, and airmen? Here are a few of them, culled from Dr. Greene's article:

"The clothing must be as nearly as possible waterproof. . . . It should also be windproof. . . . The boots must be loose, supple, well oiled, and preferably without toe-caps. . . . Socks should be undarned, and also loose. . . . Garters and sock suspenders should be forbidden, the socks being kept up by pinning them to the pants." Inasmuch as the soldier does not choose his own clothing, one concludes that the responsibility for breach of this "rule" rests with the War Office and not with the men who have to wear the clothing with which they are issued. The serving soldier, before becoming liable to be "treated as a criminal" or dubbed as a "lucky fool," is surely entitled to know whether representations have been made by the University of London, the British Postgraduate Medical School, or Dr. Greene that all Army clothing *must* be supplied in accordance with the above specification; and whether the Army authorities have declined to take the action recommended. From my experience of life at the Front there should not be much difficulty in forbidding garters and sock suspenders; but I can think of no valid reason why the veto should not be extended to include rings on the fingers and bells on the toes. With regard to the suggested pinning of socks to the pants, we must again assume that the august bodies responsible for this "rule" have given to it the detailed consideration it merits.

"It is absolutely necessary that wet clothes, especially boots, socks, and gloves, should be changed at every opportunity. Combatant officers are sometimes inclined to regard such an instruction as 'soft'; they must be overruled." Overruled by whom? One must assume "by non-combatant officers"; and it would be interesting to learn what advice Dr. Greene would give to a non-combatant officer about to overrule a combatant officer during operations on active service. (For instance, during recent operations on the Western Front when our soldiers, according to official admission, have been wading about waist-deep in water.)

"A good method of drying boots is to lay a 6-foot length of gas-pipe across a brazier, push one end into the toe of the boot, and blow air from the other end with a bellows. If the business end of the pipe is made like a toasting-fork many pairs can be dried at once." No doubt; but there are a few minor points in this operation which require some elucidation. For instance, at what stage in the proceedings is it considered that the brazier should be lit, if at all? Of course the blowing of "hot air" should not offer any great difficulty to the old soldier. I am rather afraid, however, that he might experience some difficulty in deciding which is the "business" end of the gas-pipe—the one which is made like (and no doubt would be used as) a toasting-fork. At this point I should like to submit for consideration a suggestion which might be given a trial. If the other end of the gas-pipe (which, for purposes of differentiation, might be called the "pleasure" end) were suitably hammered out and curved it might be found of great value in picking stones out of horses' hooves; for I assume that one of the few regiments which could put the above operation into practice would be mounted—e.g., the "Gas, Coal, and Light Dragoons (the Gasoliers)." In the case of infantry regiments I have the impression that the "Lower Sixth Foot (Heath Robinson's Own)" might find some more useful adaptation for the "pleasure" end. However, these are more or less domestic details which we must leave to the discretion of the officers commanding the units concerned.

"The men must be taught not to stand still, slumped into their boots. . . . They must lie down whenever possible, with their feet higher than their heads. . . . They must not sit on seats, boxes, or firesteps in such a way that the popliteal space is constricted. They must on no account bring their feet near to a fire if they are cold or numb, but warm them between a companion's hands or inside his clothes."

So what?—I am, etc.,

Leytonstone, E.11. A. W. FORREST.

Erythrocyte Sedimentation Rate in Infective Hepatitis and in Malaria

SIR,—In the *Journal* of Jan. 6 (p. 9) there is an article by Lieut.-Col. Paul Wood on the erythrocyte sedimentation rate in infective hepatitis and in malaria. He found the E.S.R. below 10 mm. in one hour in 85% of cases of infective hepatitis during the first ten days, and above 10 mm. in about 85% of cases of malaria during the first ten days, all by Wintrobe's method.

In tropical regions there is great difficulty in differentiating between sandfly fever and malaria in the very early stages. Sometimes malaria parasites cannot be found during the first four or five days of a primary attack of malaria, and confusion with sandfly is very common. I intended to write a paper on this problem of early diagnosis, and to that end made some hundreds of estimations of the E.S.R. (also using a modified Wintrobe method) on cases later proved to be of either malaria or sandfly fever. I agree with Col. Wood on the elevation of the E.S.R. in malaria; even in the very early stages I found the average case of malaria was about 20 mm. In sandfly fever, however, I found the E.S.R. very rarely higher than 10 mm.; the figures for both malaria and sandfly are one hour's observation of the E.S.R. Confusion between sandfly fever and infective hepatitis is unlikely as jaundice in sandfly fever is almost unknown. I cannot produce the figures on which my opinion is based, but I have been using the method for some years and have grown to rely upon it. Infective hepatitis is not unknown in tropical regions, so the method may prove of use to the Services there.—I am, etc.,

FRANK MARSH.
Persia. Pathologist, Anglo-Iranian Oil Company.

The Psychiatrist and the Psychologist

SIR,—The annotation in your issue of Feb. 17 (p. 229) points out the big strides which have been made in the field of psychiatry during the war, and shows the important dependence of psychiatry and psychology on each other. There are some points, however, which would be the better for amplification. Your article points out that the training of the psychiatrist and that of the psychologist have proceeded along very different lines. This is true to an extent in that the psychologist has had no medical or psychiatric training at all, whereas the psychiatrist, especially if he holds a diploma in psychological medicine, has passed examinations in psychology. The training for such a diploma has included experimental psychology, which is the main subject used by the psychologist in connexion with vocational guidance.

Your statement adds: "The psychologist may have suggestions to offer on the subject of treatment." Unfortunately many psychologists, who have no right to do so, give much more than suggestions; they, in fact, take charge of the treatment and make no attempt to place the patient in contact with a medically trained psychiatrist. The patient often gains the impression that the lay psychologist is not only a doctor of medicine but also a specialist in psychiatry, whereas he has had no training in either of these fields. The result is that many cases in the end reach the hands of the psychiatrist, and much illness which could have been avoided has been allowed to develop. Thus many patients have become much worse than might have been the case had they been placed earlier under proper treatment. Your article rightly states: "In recent years, particularly in the field of child psychiatry, psychologists have sometimes embarked on a treatment of individual patients without adequate medical supervision. It is to be hoped that the unsuitability of this arrangement will be recognized by psychologists themselves." No doubt it is recognized by them, but they do not make any attempt to handle the situation correctly. Moreover, some local authorities are content to support child guidance clinics in which psychiatric advice is not given. The only medical opinion available in some of these clinics is that of the school medical officer, who often has had no psychiatric training or experience. The lay psychologist is placed in charge of the treatment of children when this is not the proper work of a psychologist.

In the latest report of the Child Guidance Council a list is given of seventy-five clinics recognized by the council. Some of these clinics also hold sessions at more than one centre. But of the seventy-five, only fifteen are listed as Group 1 clinics—that is, clinics which comprise a complete team of qualified staff: psychiatrist, psychologist, and psychiatric social worker. In many of the other clinics the treatment is not under the direction of a psychiatrist, and yet a number of them are being subsidized by local authorities. Apparently no attempt has been made so far to prevent an increase of this arrangement by further local authorities. Surely the Ministry of Health should be advised that in future it must not supplement grants made by local authorities to clinics at which the treatment is not directed by a psychiatrist—that is, by a medically qualified specialist in psychological medicine, who has been thoroughly trained in all branches of psychiatry, including neurology and psychology, but who may not necessarily continue to be a member of the medical staff of a mental hospital.—I am, etc.,

London, W.1. RALPH A. NOBLE.

SIR,—May I plead for a little of your space to comment on the annotation on the psychiatrist and the psychologist (Feb. 17, p. 229), the general tone of which, while stating that British psychiatry has made "big strides," rather fails to justify the assertion.

It is in fact as hard to know just where to join issue with the annotation as to decide what point it intended to make. Perhaps the greatest violence to the facts is done in the sentence which runs: "Where the psychiatrist approaches the problem from the point of view of the morbid the psychologist approaches it from the point of view of normal variation." Such a statement is not only derisory but is a criticism of psychiatry, revealing a deplorable lack of familiarity with modern psychiatric approach and, specifically, with the work of Adolf Meyer, emeritus professor of psychiatry at Johns Hopkins, under whom many British psychiatrists have studied during certainly the past thirty years.

If meiosis be allowable, it is disquieting to find in such an authoritative periodical as the *British Medical Journal* the implication that Meyer's concept of human personality, first formulated nearly half a century ago, is unknown in this country. This can hardly be true; at any rate one hopes it is not true of British psychiatrists, but one would wish the general body of the profession to be spared exposure to false doctrine. One cannot expect space for a formulation of Meyer's psychobiology, but one would ask to be allowed to point out that Adolf Meyer's concept of man's nature and his views as to psychiatric training (with which, be it repeated, a very large number of British psychiatrists are thoroughly familiar) have formed an accepted element in the training at the Johns Hopkins Medical School since about 1911 and in similar medical schools since that date. Its integral and basic principle is that the student must inevitably be trained first of all in the recognition of what comes within the elastic limits of the normal, and must know how wide these limits are before he can be allowed to approach the problems of abnormal behaviour.

If the annotation be a fair sample of the reactions to war psychiatry then indeed one feels, as Prof. Meyer recently said, "the war exploitations become overrated" (personal communication). The annotation alleges that the psychiatrist "is working by a rule-of-thumb method"—one would like details—when he says that an individual is unsuited to become an officer, and that this diagnosis may be shown to be wrong by the individual actually proving satisfactory; it asks, however, for the admission of "the greater appropriateness of the psychological techniques of . . . personal [sic] selection," when, in fact, it is widely known that "psychological techniques of selection" are repeatedly falsified by the performance of the subject under non-experimental conditions. *Naturam expelles furca tamen usque recurret.* One's experience with psychiatrists and psychologists alike is that as their experience with tests increases their faith declines.

It is really regrettable to observe in the annotation the spirit of mind–body dualism. Until this antique concept is finally put away, until psychiatrists are as familiar, and known to be as familiar, with the so-called normal as with the so-called abnormal, and until all who have to assume responsibility for living human beings are medically trained, any "big strides" may well be taken in the wrong direction. One's admiration for the regaining of equilibrium in the last few lines of the annotation is tempered by a feeling that the balance was lost unnecessarily.—I am, etc.,

Edinburgh. W. M. C. HARROWES.

Nursing and Tuberculosis

SIR,—Letters recently published on the incidence of tuberculosis among nurses suggest that doctors are concerned at the incidence of infection, but that few realize the enormousness of the problems which complicate the picture. Patching up the threadbare places will not do: a new garment is required.

A sanatorium is not the place of choice for the work or training of any girl under the age of 20 at least. The conditions

of work in many sanatoria are deplorable. Old-fashioned buildings, lack of a good diet with an especial shortage of vitamins, antiquated schemes of nursing technique, and the dual role of being both "a pair of hands" and a student-nurse at the same time, all play their part in making the work hazardous for any young girl. Elementary precautions—such as the wearing of protective masks for intimate nursing procedures and the recommendations of the Medical Research Council to limit cross-infection—are regarded as measures too revolutionary to be adopted.

To remedy the situation nurse-training as a whole must be reviewed. The Horder report recommends that the student-status of the nurse in training should be fully recognized; that, by means of Government grant to the schools of nursing and by assistance where necessary for the individual student, student-nurses should cease to be the employees of their hospitals and pay (as other students do) for their training. In this way alone can nurse-training be truly established. At present student-nurses are a form of cheap labour, many of the lesser-grade training schools relying upon a minimum of student-nurses to get the ward work (including the cleaning) done. Dr. T. E. Bostock, in his letter published on Feb. 10, is quite right. Incredible though it may seem, many student-nurses in hospitals all over the country are sent into the wards upon arrival in an entirely "raw" state—whether Mantoux-tested or not. Practice precedes teaching in the majority of hospitals, the nurses learning by trial-and-error. Tuberculosis contracted during training may be the direct result of insufficient precautionary teaching either in the ward or in the class-room, or as a result of poor environmental circumstances.

The student-nurse of to-day is expected to learn a great deal, but she must learn always under difficulties, since teaching comes last in the consideration of many hospitals. When the student-nurse is also a poorly educated girl (coming forward in response to an appeal) and can scarcely write English, the strain experienced in learning anatomy, physiology, and hygiene is profound. But the student-nurse is there not only to learn: she must also get the work done, and so she must study, for the greater part, in her off-duty time.

It is a moot point whether the sanatoria produce more cases of tuberculosis among their nursing staffs than the general hospitals. The practice of training young nurses in the sanatoria before they do their general training should cease. All conditions likely to produce tuberculosis should be removed from the nurse-training schools. Such conditions are worry (e.g., about examination subjects), overwork, exposure to cold, poor nutrition, and exposure of the Mantoux-negative to massive infection. The Mantoux test should be made *before* any nurse enters a training school (too often this test is made *after* a girl has already been in heavy contact with the disease). Negative reactors should not nurse the tuberculous, and should be watched most carefully throughout their training.

Few of the improvements most urgently required in nurse-training can be brought about by the nurses alone: consent to improved nursing measures, for instance, must in many cases be obtained from the medical staff. Full discussion between *working* members of the two professions is most urgently needed.—I am, etc.,

J. EYRE.

Aural Barotrauma

SIR,—The late Sir Humphry Rolleston once said in a lecture to his students at St. George's Hospital (*Clin. J.*, Aug. 29, 1900) as follows: "First of all with regard to the word 'ascites.' It is derived from the Greek word ἀσκός, meaning a wine-skin; ascites, or in its full term, ἡ ἀσκιτης νόσος, is literally the wine-skin disease—i.e., that in which the abdomen resembles a skin distended with wine. The adjective 'ites' [ιτης] also seen in tympanites is much the same as the termination -itis (ῖτις)—e.g., in iritis and peritonitis—and is a feminine adjectival termination agreeing with the word νόσος (disease) understood. It is interesting to note that the termination -itis, which now always implies 'inflammation of,' has only acquired this meaning secondarily because the disease *par excellence* of various organs is inflammatory."

It would be possible, therefore, to defend the term "otitic barotrauma," to which Dr. A. B. Alexander objects (Feb. 24, p. 276), on the ground that barotrauma is substituted for the suppressed word νόσος, but as otitic implies inflammatory by common usage, which is the important point, either otic or aural would be better. I suggest that aural is preferable, though it produces a mixture of Latin and Greek, but the expression aural syringe is used without compunction. On the other hand, Messrs. Allen and Hanburys would certainly be astonished and perhaps puzzled by the receipt of an order from a purist in the Ministry of Supply for a few thousand otic syringes. Editorial permission is therefore requested to thank Dr. Alexander and to adopt the term "aural barotrauma."—I am, etc.,

YOUR ANNOTATOR.

Artificial Insemination

SIR,—It would be impossible to answer all the letters on this subject, even if we were to confine our attention to those which followed the publication of our article. Moreover, as many of these letters contain nothing but abuse, it would be unprofitable to answer them. We can assure those who invite us "to look this business fully in the face" that this was precisely what we hoped would be done by everybody when we submitted our report. It was an invitation to the medical profession to express an opinion on what was admittedly a highly controversial subject.

It must be admitted that the results have been very disappointing. The scientific aspects of insemination have aroused no interest, and the whole subject has been summarily dismissed as immoral by many. It should be noted, however, that the most hostile critics have been those who, having no first-hand experience of this subject, have been able to give free rein to their imaginations. We can assure these writers that adoption, even if there were enough children to go round, does not always provide an adequate solution to the problem of the childless marriage. Nor does insemination with donated semen in our experience have a disruptive action on the marriage. We have, indeed, known many cases in which the birth of a child through insemination has proved to be the turning-point in a marriage which would have undoubtedly come to grief but for this happy event. It is only those who have had no experience of insemination with donated semen who would condemn it outright as a solution for certain chosen cases. It is, of course, mischievous nonsense to suggest that, if donated semen is to be used, it might just as well be administered in the natural way. The taking of a lover introduces a new relationship which in the end may prove disastrous to the marriage.

Nothing is easier than to render the idea of insemination with donated semen ridiculous or abhorrent by means of exaggeration. To reduce everything to an absurdity by this means is a well-known polemical device, and it is not surprising, therefore, that the opponents of insemination have visualized human stud-farms, professional donors, and a number of other absurdities. That insemination has its ethical aspects we are the last to deny, but we are still unable to see on what grounds some critics dismiss it immediately as unchristianlike. Christian morality is based on the Gospels and on the teaching of the Early Church, and when this morality was formulated the possibility of artificial insemination was not even considered. Disputation would therefore have to be based upon the interpretation of other interdictions, and the condemnation of insemination with donated semen is certainly not so immediate or manifest that the subject need not even be considered. Since some opponents of this method of treatment are much concerned with the sin of masturbation we hasten to assure them that this particular difficulty can be overcome. This being so, they may be prepared to consider the end in view—the birth of a child—instead of being entirely preoccupied with the means. Unfortunately, in this correspondence the moralists have been so preoccupied with the means that they have generally forgotten this end. Finally, we would call attention to the fact that we are research workers who happen to be interested in this particular field of medicine. We have invited the opin-

of our colleagues on a very important subject, and not attempted to enforce our personal opinions upon them.—We are, etc.,

MARY BARTON.
KENNETH WALKER.
B. P. WIESNER.

London, W.1.

SIR,—May I beg a little space in which to put forward a plea for reasonable toleration in this matter of artificial insemination? It seems to me regrettable that all the old arguments that have been used down the ages against any innovation in medicine should again have to be disinterred. Substitute anaesthesia for artificial insemination in these letters of righteous indignation and we resurrect the ghost of the furore that was created when ether was first introduced. Can we not take a more rational view without undermining the true Christian values and sanctity of married life?

We can all agree that the childless marriage is a hollow thing—a plant which has wilted and produced no fruit. Those many unfortunate couples placed in this predicament must perforce seek some substitute for the emptiness that cannot be filled by the fruits of their love. Adoption has hitherto been the most widely practised substitute. It has obvious disadvantages, not the least of which is the frequently poor genetic quality of the material presented for adoption. Artificial insemination offers an alternative to adoption which has both advantages and disadvantages. Mother and child have the advantage of a physical basis to their relationship; all three partners have to face the fact of the substitute father. Obviously some couples can easily adjust to this situation where others might find it impossible.

Those critics who accuse the woman of adultery, it seems to me, confuse the letter of the law with the spirit. They see no difference between the intimacies of the bed-chamber and the practices of the laboratory. Can we not allow each couple to decide for themselves and allow them the privilege of decent motives in the seeking of a solution to their very tragic dilemma? Surely it is hardly the physician's role to set himself up in moral judgment in such cases.—I am, etc.,

Chipping Ongar, Essex. F. E. S. HATFIELD.

SIR,—The correspondence in your columns regarding artificial insemination illustrates the reluctance of even the scientifically minded to lift the blankets heaped upon procreational matters by religion, convention, upbringing, and kindred influences in order to examine that human cauldron in the cold light of science and reason.

Without entering into the merits of the case, for or against, it may be said that the subject is a facet of a problem which sooner or later humanity will have to resolve—namely, how to give effect to the influence of heredity and breeding in the interests of the improvement of the race. The prime emphasis placed by Nature on this essential is self-evident in every form of life; yet by man for men, and by men alone, it is ignored and even combated. The problem is one of especial concern and urgency to democracies, such as our own, where if the present trend towards quantity rather than quality continues there is danger of racial degeneration and subsequent extinction by reason of their own liberal doctrines. We are taught that all men are equal in the sight of God; hence we continue to breed any and every sort of rubbish, and call it His will and His work. If mankind gave as much attention to the breeding of men as they do to that of other forms of life, or even to the production, let us say, of the perfect motor-car, it might well be that the "kingdom of God on earth" would be advanced by thousands, perhaps millions, of years.—I am, etc.,

Wicksworth, Derbyshire. E. D. BROSTER.

Tapeworm in Freshwater Fish

SIR,—In the *Journal* for Feb. 10 (p. 199) Mr. T. E. Gibson reported finding in the peritoneal cavity of a trout 39 plerocercoids, which showed morphological characters similar to those described by Duguid and Sheppard (*J. Path. Bact.*, 1944, **56**, 73). The trout had been caught on Sept. 24 in a Northamptonshire reservoir, from which six dead trout had been picked up between Aug. 11 and 25. "During the period when deaths were being observed in the trout fifty grebe also died, but it is not known whether or not the dead grebe were infected with *Diphyllobothrium*."

I examined an adult male great-crested grebe, *Podiceps cristatus*, which had been found dead on Aug. 16 on the same reservoir. The grebe was very emaciated and anaemic, with oedema of the lungs, subcutaneous and intermuscular tissues. The small intestine was acutely inflamed and very much distended by a cylindrical mass of eighty-two intertwined tapeworms, *Ligula intestinalis* (Léon, 1758), which were mostly immature, though one or two showed signs of adult features. The heads and necks of three of the *Ligula* had burrowed under the cuticular lining of the gizzard, the lumen of which contained a felted mass of grebe feathers mixed with shreds of water plant. The small intestine also contained some very small cestodes, which were too decomposed for identification; some small trematodes, *Petasiger neocomense* (Fuhrmann, 1927); and two female nematodes, possibly *Contracaecum ovale* (Linstow, 1907). I am indebted to Dr. H. A. Baylis for kindly identifying these worms.

Later I was informed by the manager that on Aug. 12 a number of grebes, believed to be native to the reservoir, seemed listless and off their food. Eighteen of them were picked up dead on Aug. 14. By Aug. 21 a total of forty-nine dead grebes had been found. Of the other species of birds on or around the reservoir (e.g., mallard, teal, lapwings) none appeared to be affected. Between Aug. 12 and 21 "some fish, mostly trout, about 3 to 4 lb. in weight, also died, most of them in bad condition. No careful examination was made of the trout, but a roach was seen with tapeworms in it." The reservoir, completed and filled 4 years previously, was shallow owing to drought. At the beginning of August the temperature of the water rose; on Aug. 17 it was 69° F. and on Aug. 21 it dropped sharply, after which date no more dead birds were picked up and the few surviving grebes appeared to have recovered.

I was impressed by the severity of the enteritis which *Ligula intestinalis* is capable of producing when examining a goosander drake, *Mergus merganser*, which had been found dead on a freshwater lake in October, 1935. Beyond a single trematode, possibly *Diplostomum parviventosum* (Dubois, 1932), the duodenum contained two adult *Ligula intestinalis* (Léon, 1758), which had produced acute haemorrhagic ulcerative duodenitis with secondary acute septic peritonitis.

From Bruno Hoffer's *Handbuch der Fischkrankheiten* (Stuttgart, 1906), Sprehn's *Lehrbuch der Helminthologie* (Berlin, 1932), and H. A. Baylis (*Vet. Rec.*, 1934, **14**, 1472) I gather that the first intermediate hosts of the ciliated hexacanth *Ligula* embryo are freshwater Copepods (*Cyclops and Diaptomus*). The second intermediate hosts (of the plerocercoid) are various freshwater fish, chiefly Cyprinidae. The final hosts have been identified as freshwater fish (carp, tench), and several species of birds which eat freshwater fish (divers, grebes, gulls, terns, herons, eagles, hooded crows, etc.). In order to clear up the identity of Mr. Gibson's plerocercoids I would suggest that they be fed to final-host birds. Even the domestic duck might well serve for such a repeat of Duchamp's experiments (1876) as referred to by T. S. Cobbold (*Parasites*, etc.; London, 1879). According to Cobbold the *Ligula* of the final-host fish do not attain sexual maturity. The sexually immature was termed (*vide* Hoffer) *Ligula simplicissima* (Rud., 1802), now, as Dr. Baylis kindly informs me, generally regarded as synonym of *L. intestinalis* (L., 1758). Thus by feeding the plerocercoids to goldfish Mr. Gibson could produce adult *Ligula* (if they are *Ligula*) more easily under laboratory conditions, but they would not enable him to complete the whole cycle of development. The duck appears to be the experimental host of choice.—I am, etc.,

London. TOM HARE.

Wilkinson's Ointment

SIR,—In the obituary of Dr. A. T. Wilkinson (Feb. 10, p. 201) your contributor remarks: "One prescription of his had a curiously wide European reputation," basing this conclusion on the fact that some Manchester medical workers with the Russian Army in the last war "found that scabies was treated with what the Russians called Wilkinson's ointment, the formula of which was equal parts of sulphur and ammoniated mercury ointments and of benzoated lard. . . ."

I am loath to detract from the credit due to this distinguished physician, but suspect that some confusion may have arisen.

The preparation known as Wilkinson's ointment has indeed been very widely used on the Continent, especially Central Europe, for scabies and various chronic skin affections for a very long time, probably about 100 years. The American dictionaries of Dorland and of Stedman agree in ascribing it to *J. H.* Wilkinson, "English physician of the 19th century," and they both state that it is the compound sulphur ointment of their national formulary, and this is identical with ung. sulphuris co. *B.P.C.*—namely, sublimed sulphur 15 g., calcium carbonate 10 g., tar 15 g., lard 30 g., soft soap 30 g.

In the 1923 edition of the *B.P.C.* the synonyms of ung. sulphuris co. are given as Wilkinson's ointment and unguentum ad scabiem viennense. The *Extra Pharmacopoeia* gives Wilkinson's ointment as a synonym of ung. picis et sulphuris, a London Hospital formula of very similar composition. Volk and Winter's *Lexikon der Kosmetischen Praxis* (1936, Vienna: Springer) says it is a tar–sulphur ointment, and that "it is now mostly used in Hebra's modification as Hebra-Wilkinsonsche Salbe" as follows: cretae albae 5.0, sulfur. praecip. 7.5, ol. rusci 7.5, sapon. kalin., adip. suill. āā 15.0. They give as the "old prescription": cretae 8.0, flor. sulf. 12.0, ol. fagi 12.0, sapon. kalin. 24.0, adip. suill. 24.0. This implies that a Wilkinson's ointment with the latter formula was an established remedy in Hebra's day (1816–1880). It will be seen that at Hebra's death Dr. A. T. Wilkinson would have been only 27.

All these formulae agree in containing tar, sulphur, and soap. If, therefore, the Russians were really using a mixture of sulphur and ammoniated mercury ointment and benzoinated lard, it may be that this was a formula devised by Dr. A. T. Wilkinson. It is, however, unlikely that, mainly for the same disorder and under the same name, two ointments with different formulae, invented by different Wilkinsons, should have been widely used abroad.—I am, etc.,

London, W.1. W. N. GOLDSMITH.

Breathing and Coronary Circulation

SIR,—In your issue of Feb. 24 you included a letter from Dr. R. Halstead Dixon under the heading "Breathing and Coronary Circulation." In the text of this letter Dr. Dixon has inserted in the manner of a parenthesis a reference to one of Mr. F. Matthias Alexander's books, *Constructive Conscious Control of the Individual*, and both the substance of his reference *and* the subject-matter to which it is set in relation in the text give an entirely misleading conception of Mr. Alexander's work. In sending you his letter Dr. Dixon may have been motivated by the desire to do a service to work which has attracted his interest and to help his fellow practitioners and others; and you may have been motivated by similar desires in accepting his letter; but your combined actions, which have been based upon misconceptions and misunderstanding, have resulted in disservice to all your readers. Alexander's work deals with demonstrable truth, and no amount of misrepresentation can destroy it, for truth will out; but misrepresentation may delay its spread and hinder its application when and where it is most needed.

On Jan. 28 I submitted a letter to you under the heading "The 'Psychosomatic' Approach," which letter you rejected upon the grounds of lack of space. I sent a copy of my letter to Mr. Alexander, who replied that it was "excellent"—an expression which when used by him indicates that the subject-matter is founded upon a reliable conception of his work. Mr. Alexander's work deals with the re-education of defective sensory appreciation which is the means whereby misconceptions and misunderstanding are reached, and his work also deals with the manner of use of the self which is the means whereby all the actions—including "medical" actions—are conceived and guided.—I am, etc.,

Bolton, Lancs. MUNGO DOUGLAS, M.B., CH.B.

SIR,—Since my letter under this heading appeared on Feb. 24 Mr. F. Matthias Alexander has been in communication with me. I regret that he was misinterpreted, for which I apologize.—I am, etc.,

Ealing, W.5. R. HALSTEAD DIXON.

GIFT BY AMERICAN ANAESTHETISTS

In return for the hospitality which during the last two and a half years anaesthetists in the United States Forces passing through London have received from the Royal Society of Medicine, the American Society of Anaesthetists has presented for installation in the Barnes Hall at 1, Wimpole Street a 16-mm. cinematograph projector for sound and picture. The presentation was made on March 2 by Col. R. M. Tovell, U.S.A.M.C., who spoke of the appreciation of himself and his colleagues of the opportunity they had been given of listening to British medical men of renown and of making many valuable friendships.. The gift was received by Dr. Frankis Evans, president of the Section of Anaesthetics of the Society, with some appropriate words concerning the understanding and good fellowship which it commemorated. In his turn he handed over the apparatus to the President of the Society, Surg. Rear-Adml. Gordon-Taylor, for the use of the R.S.M. in general. In accepting the gift Admiral Gordon-Taylor remarked on the contribution which American anaesthetists had made to the advancement of anaesthesia. A century ago Wells and Colton of Connecticut did pioneer work with nitrous oxide, while from Morton and the Massachusetts General Hospital came ether anaesthesia. Thirty years ago Gwathmey of Chicago introduced—or perhaps reintroduced, for it was first essayed by Pirogov, the great Russian surgeon, in 1847—the rectal channel for ether administration. He added that the charming generosity and liberality of the medical profession in the United States were well known to many of them, and he from personal experience, both as an individual and in a representative capacity, could testify to it. It was customary to raise monuments in stone or bronze to the honoured dead, but this gift was no barren or silent symbol; rather was it an eloquent and rhythmical reminder of a "lively anaesthetic entente," and, in a wider sense, of the faith and friendship and mutual sacrifice of the two great English-speaking peoples. They all trusted that this growing understanding between the two countries would be, not a temporary liaison, but a perpetual friendship.

The Services

The following appointment, awards, and mentions have been announced in recognition of gallant and distinguished services in the field:

M.B.E. (Military Division).—Capt. J. H. D. Millar, R.A.M.C.

M.C.—Capts. A. D. McKenzie, C. A. Richardson, and K. A. C. Clarke; Lieut. J. G. Des Biens, R.C.A.M.C.

Mentioned in Dispatches.—Major (Temp.) R. Stuppel (killed in action) and Capt. D. B. Watson, R.A.M.C.

The following awards have been announced in recognition of gallant and distinguished services in North-West Europe:

Second Bar to the D.S.O.—Brig. (Temp.) H. L. G. Hughes, C.B.E., D.S.O., M.C., R.A.M.C.

M.C.—Capt. (Temp. Major) W. J. Hay; Capts. G. M. Killpack, G. P. Mitchell, H. N. Smith, J. M. Willcox; Lieuts. F. Hartley and W. M. Walker, R.A.M.C.

CASUALTIES IN THE MEDICAL SERVICES

Killed in action in Burma.—Capt. Archibald Menzies Ogilvie, R.A.M.C.

DEATHS IN THE SERVICES

The death has been announced of Col. JOHN CRIMMIN, V.C., C.B., C.I.E., I.M.S.(ret.), at Wells, Somerset, at the age of 85. He qualified in Dublin in 1882 and subsequently took the D.P.H. He entered the Indian Medical Service in 1882 and distinguished himself during the Burma campaign of 1886–8, and when S.M.O. of the Karen Field Force during the forcing of the Nanko Defile he gained, in 1889, the first Victoria Cross to be awarded to an I.M.S. officer. Later he entered the Bombay Medical Service and was port health officer of Bombay for a number of years and became well known to many I.M.S. officers embarking for leave home as a genial Irishman. In 1901 he was awarded the C.I.E. During the war of 1914–18 he served on the North-West Frontier of India and became Assistant Director of Medical Services, India. He received the C.B. in 1913, was Honorary Physician to the King 1916–19, and retired in the latter year. Col. Crimmin resided for a time at Croydon but later moved to Somerset. He thus had a varied and distinguished career and will long be remembered by his many friends. He was married and had two sons.

Obituary

D. CHARLES WELSH, M.B., CH.B.

The death took place very suddenly on Feb. 20 at Kippford in the Stewartry of Kirkcudbright of Dr. David Charles Welsh, who had retired from practice in Castle Douglas in June, 1944, after 40 years of active work in that town. He was born in 1880 at Innerleithan, graduated M.B., Ch.B. at Edinburgh in 1903 and began practice in Castle Douglas. He served with the R.A.M.C. in the last war from 1915 until the end, retiring with the rank of captain. Medico-political matters were of particular interest to him. As a member of the B.M.A. he completed two terms of office as chairman of the Dumfries and Galloway Division and later was elected president of the Border Counties Branch of the Association. The Castle Douglas Cottage Hospital was very near to his heart and benefited by his services, as it was through his untiring efforts that a very efficient *x*-ray plant was introduced and was operated by him as honorary radiologist until his retirement. In public work Dr. Welsh gave valued service to the community, being co-opted a member to the Castle Douglas Town Council in 1910 and at the next election was returned at the top of the poll, subsequently becoming Provost in 1912. At the time of his election he was the youngest Provost in Scotland. A member of the Scottish Episcopal Church, he was one of the Vestry of St. Ninian's Church, Castle Douglas, and, having considerable musical talent, frequently acted as organist. His public service also included the offices of vice-chairman of the Stewartry Branch of the St. Andrew's Ambulance Association, membership of the Castle Douglas Nursing Association, the Stewartry Insurance Committee, and local medical and panel committees. Dr. Welsh had a most kindly and sympathetic nature and was regarded with much affection by his patients, who duly appreciated his skill and unvarying attention. To his colleagues in the district he was a much-valued friend and gave unsparingly of his kindly help, which was often sought by them.

Dr. Welsh's death (writes A. C.) has profoundly affected a wide circle of patients and friends who had hoped he would regain the health and vigour which he had sacrificed in ungrudging service. Within a few years of coming to Castle Douglas he had entered into partnership with Dr. Robert Lorraine, an association which continued for nearly 40 years. The practice was an extensive one and Dr. Welsh gave unsparingly of his wide knowledge and experience. He was the "family doctor" in the highest sense of the term. His interests were many. Three stand out. He was particularly concerned with the Cottage Hospital and was the driving force in its development. He spared no pains in his successful efforts to keep it up to date, and he was responsible for both the installation and the working of its *x*-ray department. He was an enthusiastic member of the B.M.A., and his presidential address to the Border Counties Branch on "The Subcutaneous Injection of Oxygen and Carbon Dioxide" was published in the *B.M.J.* in 1932. His wise counsel in various committees was highly valued. The Voluntary Aid Detachment of the Red Cross found a very warm place in his heart. He was lecturer to the local branch from its inception in 1911 until his retirement, and he twice had the pleasure of seeing his team win the Caledonian Shield. His relaxations were few, but perhaps he most enjoyed being afloat on the Solway at the helm of his yacht, preferably with a few privileged passengers. His fishing-rod, too, was a loved companion. Fearless and outspoken, his sincerity and charm of manner always successfully coated the pill. The Stewartry of Kirkcudbright has suffered a loss that is irreparable. To Mrs. Welsh and her three daughters sincere sympathy is extended from a host of friends who held him dear and appreciated his sterling worth.

ALEXANDER FORBES, M.B., C.M.

Alexander Forbes, who died at Sheffield on Feb. 7, at the age of 80, was a man of more than local importance. He was one of the most influential general practitioners in the country. An Aberdonian, educated at the local Grammar School and University, he was rather late in qualifying. One reason was that during his student career he learned one day that a famous Peterhead whaler, the *Eclipse*, was delayed in port because the surgeon had been taken seriously ill; on the spur of the moment he shipped as surgeon.

In 1890 he took his M.B., C.M. and came to Sheffield, where he set up in general practice. He soon built up a large practice and won a seat on the City Council as a Conservative. After three years he did not seek re-election because he found the duties too time-consuming. He was the first advocate in Sheffield of meals for school-children. Although a member of the B.M.A. from 1892, it was not until the fight about the Insurance Act that he gained a great local reputation as a leader of the profession. The fight was lost, and the feeling in the profession was very bitter indeed, but Forbes was the heart and soul of a party of practitioners who determined to make the best of things and to try to get the best possible medical service for the city. He became chairman of the Panel Committee, whilst one of his old political opponents, the late Mr. Arthur Neal, became chairman of the Insurance Committee. Forbes could always appreciate the legal point of view and Neal the medical point of view; to the present writer the co-operation of two such political opponents has always appeared to be a shining example of what municipal politics ought to be. Forbes combined his local work, which was extremely onerous, with a seat on the Council of the B.M.A. and on the Insurance Acts Committee. He was also much in request as a member of or medical assessor to many of the tribunals and committees which were continually instituted to settle problems arising on range of service, prescribing, etc., and in this way played a great part in setting up the kind of "case law" which governs the administration of the Insurance Acts. His notably judicial mind was of the greatest service on these bodies. He was also for some time a member of the West Riding Panel Committee and various liaison committees and subcommittees which served to unite the profession in Yorkshire. For some years Forbes and Hillman of Wakefield served their profession together in Yorkshire and in London, and will be remembered together. Forbes was a regular attendant at Annual Meetings, being Representative of Sheffield on eight occasions.

Besides his work for the Sheffield Division of the B.M.A. Forbes held office as vice-president of the Section of Industrial Diseases at the Sheffield Annual Meeting in 1908, as secretary of the Section of Medical Sociology at Glasgow in 1922, and as vice-president of the Section of Medical Sociology at Portsmouth in 1923; he had also served on the Central Ethical Committee of the Association and several subcommittees. He represented the Local Medical Committee on the Court of Management of the Royal Sheffield Infirmary and Hospital, and was a member of the Onslow Committee on Hospitals.

He was a man of very alert mind and he retained his alertness to the end. Thus in 1938 he attended a postgraduate course at a Northern city and brought back to Sheffield a wonderfully detailed account of what had been taught there. He could pick up a new medical doctrine or get the gist of new knowledge in a remarkable manner. He took a very lively interest in Sheffield University, and was a leading spirit in the movement which resulted in the Panel Committee making a voluntary grant of £1,000 to the University for the equipment of its (then) new department of pharmacology. What was the chief characteristic by which we shall remember him? Certainly his unfailing kindness! During two wars, and during the intervening period, puzzled and anxious practitioners have taken their problems to him and have received advice and help. Censoriousness and righteous indignation had no part in his make-up, so he made no enemies in a long career during which he was often engaged in controversy. A. E. B.

The death occurred at his residence in Kingsmere Avenue, Belfast, on Feb. 4 of Dr. WILLIAM ROBERT HAYDEN. Born in 1872, he qualified as M.B., Ch.B., B.A.O. of the old Royal University of Ireland in 1905, and proceeded to the M.D. degree four years later. For almost forty years he was engaged in general practice in the Cliftonville district of Belfast, and gained for himself an enduring place in the affection of very many people. The fact that he himself had to bear the burden of a chronic disability seemed to make him the more anxious to bear the burdens of others, and to increase his sympathy for the sick and his understanding of the problems of disease. Modest and unassuming, he was a sound diagnostician, an accurate observer, and keenly interested in each new development of medical treatment. During the air raids of

1941 many hundreds of houses in his neighbourhood were destroyed, and he rendered magnificent service to the injured with a fine disregard of his own safety. Dr. Hayden is survived by his widow, two daughters, and a son, Dr. Ernest Hayden.—R. M.

It is now known that Dr. ARTHUR CLEMENT STAMBERG, O.B.E., of St. Helier, died in Jersey on Aug. 19, 1944. He had studied medicine in Edinburgh, London, Dublin, and Vienna, and graduated M.B., C.M.Ed. in 1892, after which he served as clinical assistant at the Royal Westminster Ophthalmic Hospital and as aural assistant at the Central London Throat Hospital. He joined the British Medical Association in 1894 and was a member of the British Institute of Radiology and of the Ophthalmological Society. He served with the R.A.M.C. in the last war and reached the rank of lieut.-colonel, and later was Deputy Commissioner for Medical Services under the Ministry of Pensions for the Channel Isles area. Dr. Stamberg published notes in these columns on ophthalmological subjects and also, in 1922, a paper "The Pensioner: A Clinical Study," when he was president of the Southern Branch of the B.M.A.

Dr. JOHN ROBERT SUMMERS PARK, who had been part-time M.O.H. for Dukinfield for 38 years, died in retirement on Feb. 16 at Romiley, Cheshire, aged 84. He studied medicine at Owens College, Manchester, and St. Thomas's Hospital, qualifying L.R.C.P.&S.Ed. and L.R.F.P.S.Glas. in 1887. He started his professional career at Dukinfield in the following year, and in 1892 was appointed M.O.H. to the old local board. When Dr. Parks retired from public service at the end of 1930 the death rate in Dukinfield had fallen by 50%, the infant mortality was the lowest of any town in Cheshire, and the sanitary organization was beyond reproach. Tributes to Dr. Park's valuable work were paid by the Health Committee and by the Town Council in public session, and he received a presentation at a dinner in the town hall. He was for many years a member of the visiting staff of the Ashton and District Infirmary and the Children's Hospital, had been president of the Ashton-under-Lyne District Medical Society, and chairman of the local Division of the B.M.A. Dr. Park was a J.P. for Cheshire and an officer of the Order of St. John of Jerusalem.

Dr. BENJAMIN HUGH NICHOLSON, late of Colchester, died suddenly at Lynwood on Feb. 19 aged 85. He graduated M.B., C.M. of the University of Edinburgh in 1884 and followed this with postgraduate study in Vienna. He was for many years surgeon to the Essex County Hospital, becoming the senior member of the staff, and had been medical officer to the Post Office and the Orphans' Home, honorary surgeon to the Fire Brigade, and medical examiner for the Education Department; he also acted as medical referee for Colchester and District under the Ministry of Pensions. Dr. Nicholson joined the B.M.A. in 1896, served on the Central Council in 1908–9 and 1911–12, and represented his Division at the Annual Meeting at Swansea in 1903.

Dr. FREDERICK AUGUSTUS SHARPE, medical officer of health for Preston, died at Longton on Feb. 21. He was born in Leicestershire in 1881, and from Guy's Hospital graduated M.B., B.S.Lond. in 1905. He proceeded to the M.D. in State Medicine in 1910 and took the D.P.H. of Leeds. Deciding to make his career in the Public Health Service he became resident medical officer at Monsall Fever Hospital and assistant M.O.H. for Derby. In 1911 he was appointed M.O.H. for Chesterfield, and after four years there moved to Barnsley. He took up his duties as M.O.H., school medical officer, and tuberculosis medical officer for the county borough of Preston in 1920. Dr. Sharpe had been a member of the B.M.A. since 1909, and contributed to these columns on Oct. 24, 1924, a report on an unrecognized outbreak of smallpox in a community where the only control was the previous partial vaccination of the contacts and the fact that it occurred in institutions under discipline and observation. A colleague writes: The tragically sudden death of Frederick Augustus Sharpe at the age of 63 came as a great shock to his many medical friends. Only the previous day he had carried out his official duties apparently in his usual health. A native of Sileby, Leicestershire, he was educated at Loughborough and Chesterfield Grammar Schools and at Guy's. He was an ex-president of the North-Western Branch of the Society of Medical Officers of Health, and sometime member of the council of that society. In his work he was conspicuous for high administrative ability and for the soundness of his judgment. The outbreak of war imposed heavy burdens upon him and it was his task to establish the medical services in connexion with civil defence. Here his powers of organization found ample scope. His sense of loyalty, his geniality, and his ready wit were characteristics which endeared him to his friends and colleagues. The loss of his elder son, Capt. R. M. Sharpe, R.A.M.C., who was killed in action in 1943, was a grievous blow to him, but he bore it with calm fortitude. He is survived by his wife, a son serving abroad in the Royal Corps of Signals, and a daughter who is a bacteriologist. To them we extend our deep sympathy.

We regret to announce the death on Feb. 22, at the early age of 38, of Dr. NORMAN LLOYD PRICE of Clifton, lecturer on diseases of children in the University of Bristol, and honorary physician to out-patients at the Bristol Children's Hospital. He studied medicine at Bristol, took the English Conjoint diplomas and the M.B., Ch.B. degrees of his university in 1929, proceeded M.D. in 1934, and became M.R.C.P. in 1936. After serving as house-physician and casualty officer at the Bristol General Hospital he worked for a time as deputy medical superintendent of the Southmead Hospital, Westbury-on-Trym, and in addition to his other hospital posts was consulting physician to the Stoke Park Colony. Dr. Lloyd Price was a member of the council of the Section of Disease in Children of the Royal Society of Medicine and had published papers in the *Lancet* and the *British Journal of Surgery*. He joined the B.M.A. in 1930 and was an active member of the Bristol Medico-Chirurgical Society.

Dr. EDWARD PERCIVAL DICKIN, for 33 years M.O.H. of Brightlingsea, Essex, died on Feb. 25. He studied medicine in Edinburgh and Paris, and at the Middlesex Hospital, graduated M.B., C.M.Ed. in 1893, and proceeded M.D. in 1899, after taking also the English Conjoint diplomas. Before settling in practice at Brightlingsea he had been house-surgeon at the Northampton General Hospital. He served during the last war with the rank of captain, R.A.M.C., as officer-in-charge of the medical division of a military general hospital in Malta, and for some years he examined in first aid for the British Red Cross Society. Dr. Dickin joined the B.M.A. in 1896, held office as chairman of the North-East Essex Division in 1930–2, and in 1936 was elected president of the Essex Branch. When he retired from the post of M.O.H. in 1933 he received from past and present members and officers of the Brightlingsea Urban District Council an inscribed silver salver, and public tributes were paid to his long and able services to the town and his devotion to his private patients. He was a Fellow of the Society of Antiquaries and published five years ago *A History of Brightlingsea: a Member of the Cinque Ports.*

To the distress of his friends and relations Dr. CHARLES MACDONELL ANDERSON passed away at the age of 78. Dr. Anderson was born in India, the son of a colonel in the Royal Engineers who had been through the siege of the Residency at Lucknow. He was also the nephew of another Mutiny hero, Sir James Outram. He entered Edinburgh University, where he graduated in 1889; he then came to the London Hospital and took the M.R.C.S., L.R.C.P. in 1892. Like many others of his time he went abroad for postgraduate study at Vienna and Dresden. He graduated M.D. in 1896, and was assistant in the ear, nose, and throat wards of the Edinburgh Royal Infirmary. Coming south Dr. Anderson settled and practised for nine years in Faversham before moving to South Kensington, where he spent the rest of his life. He rapidly acquired a fashionable practice. During the last war he was in charge of the Lady Mary Maynell Hospital for Officers and the Red Cross Hospital, Grosvenor Gardens. He was mentioned twice in dispatches. Though failing in health he worked all through the "blitz" days. He was a man of sound judgment and even temper, never ruffled or put out in the most trying circumstances. He was a most likeable man with a large circle of friends. He will long be remembered as an excellent physician and a delightful friend.—D. C. L. F.

Dr. EDWARD STANLEY ROBINSON (writes a correspondent) began practice in Stourport-on-Severn, Worcestershire, in 1895 and became one of the leading general practitioners in the county. He was in every way an ideal family doctor. His professional ability was of a very high order, and he was untiring in his devotion to his patients. His outstanding characteristic was his humanity and kindness, and he was equally beloved in the mansion or the humblest cottage. As medical officer of health for Stourport, a position he held for over 40 years, he was fearless and outspoken in his efforts for the improvement of the housing of the inhabitants and the general

sanitary condition of the district. He took a keen interest in all matters affecting the medical profession, and was a very regular attendant at meetings, at which his remarks were always practical and moderate.

Surgeons who carried out research at the Buckston Browne Farm at Downe will learn with regret that Mr. E. J. SMITH, the custodian of the Farmhouse, died on Feb. 23 in Farnborough Hospital, Kent, from cancer of the lung at the age of 55. He entered the service of the Royal College of Surgeons as college messenger in 1908 at the age of 18, later becoming an attendant in the museum of the College. He served through the war of 1914–18, and on demobilization was placed in charge of Room I, and thus had the care of anatomical preparations, osteological specimens, and a vast collection of human skulls, ancient and modern. He became a master of skull-craft, learned how to reconstruct and delineate the most crushed specimens. It was he who chiselled out of the solid rock the fragile fossil bones of the Mount Carmel child. Geologists and others brought fossil bones for identification; Smith ran them to their source with the intuition and acumen of a Sherlock Holmes. On the opening of the laboratories at Downe in 1932, the Council of the College appointed Smith to the custodianship of the Farmhouse, while Mrs. Smith was made its housekeeper. He entered the service of the College when William Pearson was prosector, the third generation of the Pearson family to devote its skill and loyalty to its service. Smith absorbed and continued the Pearsonian tradition. Although born and bred a Londoner, he took most kindly to village life and earned the respect of all he came in contact with by his modesty, reticence, and quiet intelligence. A service to his memory was conducted in the church of Downe on Tuesday, Feb. 27, and was attended by representatives from the College.—A. K.

The following well-known medical men have died abroad: Dr. JAMES ADDISON BABBITT, emeritus professor in oto-laryngology at the University of Pennsylvania, aged 74; Dr. JEAN LOUIS FAURE, formerly secretary-general of the French Society of Surgery, aged 81; Dr. GRAEME MONROE HAMMOND, emeritus professor of neurology and psychiatry at the New York Postgraduate Medical School and Hospital, Columbia University, aged 86; Prof. FRITZ SEILER, formerly director of the Medical University Polyclinic of Berne, aged 69; Dr. WILLIAM THORNWALL DAVIS, consultant ophthalmologist to the Surgeon-General of the United States Army, aged 67; Dr. NICOLAS BENDIA, co-founder of the Colombia Red Cross and professor in the Bogota faculty of obstetrics, aged 75; and Dr. MAX BERGMANN, biochemist, member of the Rockefeller Institute for Medical Research, aged 58.

Medical Notes in Parliament

Child Immunization in Glasgow

On Feb. 20 Mr. WESTWOOD informed Major Lloyd that the medical officer of health for Glasgow estimated that of the children of school age and pre-school age in Glasgow at Dec. 31, 1943, the percentages immunized against diphtheria were 60 and 23 respectively. Major LLOYD asked if the Minister would receive a deputation from the medical profession in Glasgow to discuss ways and means of improving the position. Mr. WESTWOOD replied that the Minister was always willing to meet deputations prepared to put any case before him to improve health conditions of Scotland.

Foot-and-Mouth Disease Infection

On Feb. 20 Major BRAITHWAITE asked the Minister of Agriculture whether, in view of the fact that the principal source of infection causing outbreaks of foot-and-mouth disease in this country was imported meat, and to provide guarantees against the sale of such diseased meat to the public, he would undertake, after giving due warning, that in future the import of meat would be prohibited from any country which had not taken satisfactory steps to eradicate this disease. Mr. HUDSON said he had consulted the Minister of Health and the Minister of Food on this matter. He was advised that there was no evidence of danger to human health from the importation into this country of carcases from the countries in which foot-and-mouth disease occurred, although there was a serious danger to our own farm animals if they were allowed to come into contact with meat which might be infected. There would be difficulty about adopting the course proposed in the question at present.

Contributory Negligence in Cases against Doctors

Sir DAVID MAXWELL-FYFE on Feb. 22 moved the second reading of the Law Reform (Contributory Negligence) Bill. The Bill, which has already passed through the House of Lords, would apply to accidents on land the Admiralty rule that if the person suing had contributed to the negligence he would still have a right to a proportion of the damages which he would have recovered if entirely free from blame.

Dr. RUSSELL THOMAS asked what would happen, under the Bill, in actions against professional men, such as actions against doctors for malpractice. Such actions now frequently failed. Many were brought on the off-chance of getting damages, or from malice. He had investigated a series brought during 30 or 40 years against doctors and found that in very few cases did the plaintiff succeed. Often the court condemned the plaintiff for bringing the action. The Bill would tend to increase the number of such actions. It would be easy to come to court and endeavour to show some degree of negligence. On the other hand the professional man could no longer win his case by alleging contributory negligence in the patient's application of treatment. Mr. GLENVILLE HALL said that if in the past doctors had been guilty of negligence and had got away with it, it was time the "racket" was stopped.

Sir DAVID MAXWELL-FYFE said that in actions against professional men the question of contributory negligence seldom arose. The issue was whether there had been negligence or breach of duty on the part of the professional man. That took a deal of establishing, and there were few successful cases. He could not see that the professional defendant would be prejudiced in any way by the Bill.

The Bill was read a second time.

The Nation's Water Supply

On the motion of Mr. Willink the House of Commons on Feb. 21 read the Water Bill a second time. Mr. WILLINK said one of the purposes of the Bill was to provide an up-to-date substitute for the Waterworks Clauses Act of 1847, commonly known as the "Waterworks Code." Until now there had been no general revision of that code. This Bill gave powers to secure, by compulsion if needed, a combination of water undertakings. These were far too numerous. The Bill also tightened the provisions against pollution of water. Much of the national health was due to the work of the water undertakers in providing safe and ample supplies in the great towns. The nation was free from cholera and almost completely free in recent decades from typhoid. Between the wars the number of houses in the country without piped supplies had been halved, but one-third in the countryside still lacked such a supply.

Mr. WOOTTON-DAVIES remarked that there was no definition of pure or wholesome water. A dangerous chemical, chlorine, was to-day put into the water everywhere. He believed the practice was first to put in ammonia and then to neutralize that with chlorine. Had the Minister investigated the effect of those chemicals on lead pipes and brass taps? The Bill allowed wells to be sunk to depths less than 50 feet. Such wells merely tapped surface drainage and were a danger. He suspected that arsenical sheep-dips eventually got into the water supply. He suggested that the Minister should take powers to enforce the softening of water at the source. Mr. R. C. MORRISON asked the Minister to make the sealing off of disused wells obligatory. Under the present law a well could be abandoned and left with all the slime running back into the underground water.

Committee on Children in Homes

Mr. HERBERT MORRISON announced on Feb. 22 the appointment by Mr. Willink, Mr. Butler, and himself of a committee on children who lacked a normal home life. The chairman is Miss Myra Curtis, principal of Newnham College, Cambridge. Other members include Dr. Somerville Hastings, chairman of the L.C.C.; Dr. J. C. Spence, professor of child health in the University of Durham; Miss S. Clement Brown, in charge of the Mental Health Course for Psychiatric Workers, London School of Economics; and Miss Lucy G. Fildes, Provisional National Council for Mental Health.

E.M.S. Hospital Expenses.—On Feb. 21 Mr. WILLINK told Sir E. Graham-Little that he had no evidence of a system alleged to exist in certain E.M.S. hospitals under the management of county councils whereby the steward benefited personally by keeping the expenses below a certain figure, which reduced the standard of food supplied to resident medical staff and patients. Therefore the question of action to alter this arrangement at hospitals in his jurisdiction did not arise.

Notes in Brief

Returns from local authorities at Dec. 31 last showed that 436 children in England and 112 in Wales were then awaiting institutional treatment for pulmonary or non-pulmonary tuberculosis.

Universities and Colleges

UNIVERSITY OF OXFORD

David Whitteridge, B.M., B.Sc., formerly Demy of Magdalen College, has been elected to a Fellowship by special election. He is demonstrator in the University Physiological Laboratory, held a Beit Memorial Research Fellowship in 1940–3, and last year was elected Schorstein Medical Research Fellow.

UNIVERSITY OF CAMBRIDGE

The following have been approved for the degree of M.Chir.: J. M. Pullan, D. I. Williams.

UNIVERSITY OF LONDON

The title of Professor of Chemical Pathology in the University has been conferred on Dr. E. J. King in respect of the post held by him at the British Postgraduate Medical School.

UNIVERSITY COLLEGE HOSPITAL MEDICAL SCHOOL

Two Goldsmid entrance scholarships, entitling the holders to the final course of medical study; one Goldsmid entrance exhibition, and a Filliter entrance scholarship in pathology, both entitling the holders to a reduction in the fees due for the full course of final medical study, are announced. All are tenable at University College Hospital Medical School, and entries must be received by the secretary of the medical school (University Street, London, W.C.1) by June 30. Fuller particulars may be had from the same address.

UNIVERSITY OF MANCHESTER

The Council of the University has appointed Ronald Epey Lane, M.B., F.R.C.P., to the Chair of Industrial Health in the University. The institution of the chair was made possible by a grant from the Trustees of the Nuffield Foundation.

UNIVERSITY OF EDINBURGH

The Cameron prizes in practical therapeutics for 1945 are to be awarded to Sir Alexander Fleming, in recognition of his discovery of penicillin, and Sir Howard Florey, for his work in making possible the clinical application of penicillin.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* during the week the incidence of measles fell by 1,460, and of acute pneumonia by 243. Notifications for dysentery went up by 33, those for scarlet fever by 31, for diphtheria by 25, and for whooping-cough by 14.

The incidence of diphtheria rose slightly in the south-west and Wales. In spite of the fewer cases of measles reported, several counties showed substantial rises. In the following counties notifications dropped by the numbers indicated: Lancashire 425, Warwickshire 277, Staffordshire 236, Cheshire 221, Glamorganshire 185, London 174, Essex 169; increases were reported as follows: Yorks East Riding 184, Somerset 129, Leicestershire 122, Surrey 90. Five cases of typhoid were reported from Kent, Bridge-Blean R.D.

Dysentery notifications remain high. There were two fresh outbreaks during the week—Oxford C.B. 24, and Southampton, Petersfield R.D. 22. Only 2 cases were reported from Cornwall, where 49 were notified in the preceding week. Other large returns were Lancashire 37, London 33, Middlesex 33, Essex 22, Devonshire 18, Gloucestershire 18, Derbyshire 14, Northumberland 13, Cambridgeshire 12.

In *Scotland* dysentery notifications were 36 higher than last week, scarlet fever 17, whooping-cough 15, and diphtheria 12. The increase in dysentery was due to 16 cases in Stirling County, and a rise in Falkirk from 20 to 42. The largest of the other returns were Glasgow 24, and Edinburgh 21.

In *Eire* diphtheria notifications rose by 25. A fall of 19 cases was recorded for measles, and of 14 for scarlet fever.

In *Northern Ireland* measles notifications fell by 15, but diphtheria rose by 7.

Week Ending February 24

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,544, whooping-cough 1,539, diphtheria 457, measles 23,216, acute pneumonia 1,118, cerebrospinal fever 76, dysentery 393, paratyphoid 6, typhoid 6. Deaths from influenza in the 126 great towns numbered 51.

No. 7

INFECTIOUS DISEASES AND VITAL STATISTIC

We print below a summary of Infectious Diseases and Vita Statistics in the British Isles during the week ended Feb. 17

Figures of Principal Notifiable Diseases for the week and those for the corre sponding week last year, for: (a) England and Wales (London included). (b London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease are for: (a) The 126 great towns in England and Wales (including London (b) London (administrative county). (c) The 16 principal towns in Scotland. (d The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable o no return available.

Disease	1945					1944 (Corresponding Week				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	73	9	27	7	2	67	1	33	1	
Deaths		1	1				1	2		
Diphtheria	427	18	129	91	18	689	29	188	158	2
Deaths	9	—	1	1	1	11	1	4	6	
Dysentery	357	33	140	1	—	277	61	141	—	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	—	—	—	—	—	—	—	1	—	—
Deaths		—					1			
Erysipelas			53	10	4			39	18	2
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				9					6	
Deaths	62	8	4	17	9	55	13	9	12	1
Measles*	19,167	640	421	22	116	1,620	226	147	324	1
Deaths	16	1	1	—	—	1	—	1	1	—
Ophthalmia neonatorum	53	1	16	—	1	88	5	21	1	—
Deaths										
Paratyphoid fever	1	—	2 (B)	—	—	3	—	2 (B)	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal†	1,206	75	19	12	13	974	46	9	6	5
Deaths (from influenza)	55	11	8	4	1	38	9	7	1	—
Pneumonia, primary			317	20				199	23	
Deaths		47		17	15		33		21	11
Polio-encephalitis, acute	—	—				—	—			
Deaths		—					—			
Poliomyelitis, acute	1	—	—	—	—	8	—	—	—	—
Deaths		—					—			
Puerperal fever		2	19		—		4	10		—
Deaths										
Puerperal pyrexia‡	149	5	12	2	1	167	5	14	—	4
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,497	47	197	8	44	2,063	115	216	32	60
Deaths	2	—	—	—	—	1	—	—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	11	—	3	5	1	6	—	1	9	1
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	1,530	76	151	53	12	1,825	173	124	74	17
Deaths	14	2	2	2	2	9	2	—	1	1
Deaths (0–1 year)	456	39	55	45	44	401	50	61	47	44
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	6,014	909	815	276	189	4,984	769	653	259	169
Annual death rate (per 1,000 persons living)			18·5	17·8	§			15·0	16·9	§
Live births	6,907	764	835	340	257	6,466	749	910	409	308
Annual rate per 1,000 persons living			16·7	21·9	§			18·5	26·7	§
Stillbirths	210	13	28			226	32	29		
Rate per 1,000 total births (including stillborn)			32					31		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Medical News

Mr. J. Z. Young, M.A., will deliver an address on "The Structure, Degeneration, and Repair of Nerve Fibres" before the Royal Institution, 21, Albemarle Street, W., on Friday, March 16, at 5 p.m.

The Faculty of Radiologists will hold a Diagnosis Section meeting at 45, Lincoln's Inn Fields, W.C., on Friday, March 16, at 2.30 p.m., when Drs. A. S. Johnstone and R. A. Kemp Harper will open a discussion on non-malignant conditions of the oesophagus. Other radiological meetings to be held in London about that date are: British Institute of Radiology, 32, Welbeck Street, W., March 15, at 8 p.m, when Mr. L. Dudley will speak on stereoscopic photography and radiography; R.S.M., 1, Wimpole Street, W., March 16, at 6 p.m., Dr. J. Wilkie on radiology of the small intestine.

A clinical meeting of the Tuberculosis Association will be held at Brompton Hospital on Friday, March 16, at 2.30 p.m.

The exhibition of specimens, photographs, and drawings of war injuries on view to members of the medical profession in the Council Room of the Royal Society of Medicine will be extended another week, up to and including Friday, March 16.

A private business meeting of the Association of Industrial Medical Officers will be held at the London School of Hygiene, Keppel Street, W.C., on Saturday, March 24, at 11 a.m. At 2.30 p.m. there will be a discussion on "Ophthalmological Problems and Visual Standards in Industry," to be opened by Dr. W. Jeaffreson Lloyd, Mr. Joseph Minton, and Mr. T. C. Summers.

The Duchess of Kent attended her first meeting as president of the National Association for the Prevention of Tuberculosis in the Great Hall of B.M.A. House on March 1. The occasion was the inauguration of a Sanatorium Matrons' Section, and the meeting was attended by some 150 matrons of sanatoriums in all parts of the country. Her Royal Highness was received by the Duchess of Portland, chairman of council of the N.A.P.T., Dr. R. A. Young, vice-chairman, and Dr. Harley Williams, secretary-general.

Dr. A. H. G. Burton has recently completed 25 years' service as medical officer of health for the town of Ilford. At a commemorative function, attended by the Mayor and those Aldermen and Councillors who had been closely associated with the work of the department during this period, the present and former members of his staff presented Dr. Burton with a gold fountain pen and cheque. As chairman of the proceedings, Dr. J. H. Weir, the deputy M.O.H., outlined the developments of the local public health services over the past quarter of a century. He mentioned that during this time, in addition to Dr. Burton's capable organization and administration of a successful and progressive health policy, he had made valuable contributions to medical literature by the production of upwards of 20 original articles. Many other appreciative references to his work for the town were made.

The *Scotsman* records an interesting medical event in Delhi on Jan. 20. Lieut.-Gen. Sir Alexander Hood, D.G.A.M.S., Lieut.-Gen. Gordon Wilson, D.M.S. in India, and Lieut.-Gen. J. B. Hance, D.G.I.M.S., are all alumni of the Edinburgh Medical School, and their presence in Delhi at the same time prompted the holding of the first Edinburgh Medical School's alumni dinner. The attendance at the dinner—45 alumni and guests—was fully representative of Indian and British medicine. Among those present were Major-Gen. Richardson, Director of Hygiene, War Office, and Air Vice-Marshal Grant, P.M.O. Air Force in India. Brig. J. S. Fulton took the chair and proposed the health of "The King-Emperor"; Brig. J. D. S. Cameron proposed the toast of "The Guests of Honour," to which all three replied; Khan Bahadur Dr. Dahman proposed the toast of "The Edinburgh Medical School," and Brig. F. A. E. Crew responded.

The King has approved the appointment of Mr. Percy Barter to be a Senior Commissioner of the Board of Control; and the Minister of Health has appointed Mr. Barter to be chairman of the Board, on the retirement of Sir Laurence Brock from the public service on March 31. From 1930 to 1939 Mr. Barter was secretary of the Board and then became a Principal Assistant Secretary in the Ministry of Health. He was secretary to the Committee on Asylum Administration (1921–2), to the Royal Commission on Lunacy (1924–6), and to the Royal Commission on Local Government (1928–9).

By December, 1944, the American Red Cross had sent 5,000 tubes of penicillin by air express to the International Red Cross Committee in Geneva to be used for American prisoners of war held in Germany, and additional shipments of medicines and medical supplies will be made.

We announce with deep regret the death this week of Viscount Dawson of Penn, who was convalescing from a serious operation. A memoir will be published next week.

Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology Westcent, London*. ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

ANY QUESTIONS?

Ununited Fracture of Femur

Q.—*What is the best treatment for an ununited fracture of the neck of the femur in a man aged 78? Five days after the accident x-ray examination showed a simple fracture of the neck near the head. Two months after this there were no signs of union. Would collosol calcium or other injections be advisable? For some time after the accident the fractured bones appeared extraordinarily mobile, but in the last three months this mobility has greatly diminished.*

A.—When it was decided that pinning of this subcapital fracture was inadvisable, and that owing to the patient's age, general condition, and hemiplegia, no initial treatment other than sandbag support was indicated, it must at the same time have been decided to accept non-union as inevitable. No matter how long simple recumbency and sandbag support is continued bony union cannot be expected. Collosol calcium injections will make no difference; no other preparation will make any difference. But although bone union cannot be hoped for, the capsular contraction and fibrosis which accounts for recent diminution of mobility will give sufficient stability for the patient to be able to walk. It is sometimes advisable to fit a walking calliper splint at first. But in view of the fact that this man has hemiplegia on the opposite side it will probably be better to get him up without any splint or support, other than perhaps a simple flannel spica bandage, and teach him to walk with crutches. Later on he may be able to discard one or both crutches and walk with sticks. Some shortening may develop and necessitate a raised shoe.

The only alternative to this is to perform a bifurcation osteotomy, cutting the femur at the trochanteric level and displacing the shaft inwards so that it lies under the head of the femur. In this way telescopic instability is controlled and the patient would be able to walk still better. This is an operation of some magnitude; it involves immobilization in a plaster spica for two or three months; and it will almost certainly be inadvisable in a patient of this age and constitution. So far as the ununited fracture is concerned, surprisingly good function is often regained without any operation: the only problem with this patient is the association of an ununited fracture of one limb with hemiplegia of the other; nevertheless he should learn to walk.

Carotid Sinus and Carotid Syncope

Q.—*What is the carotid sinus? What are the symptoms of carotid syncope?*

A.—The carotid sinus is the name given to the slight enlargement of the common carotid artery at its bifurcation into the external and internal carotids. Its action is like that of the governor on an engine, and it serves to maintain the arterial blood pressure within normal limits. It is supplied by the sinus nerve, which is a branch of the glossopharyngeal nerve. The terminals of the sinus nerve are stimulated by a rise in blood pressure in the carotid sinus, producing reflex slowing of the heart, vasodilatation, and a fall in the blood pressure. This effect can often be duplicated by manual pressure on the walls of the carotid sinus in normal subjects. To induce the reflex, Weiss and Baker (*Medicine*, 1933, **12**, 297) recommend that the patient should be lying on his back, with his head elevated and slightly overhanging a support. If the head is then turned somewhat to one side, the sinus is usually located just below the angle of the jaw, corresponding to the upper level of the thyroid cartilage. Pressure is then applied towards the spinal column for two or three seconds. As the reflex develops more markedly when the patient is in the standing or sitting posture, others recommend that the pressure should be applied with the observer behind the standing or sitting patient. The effect comes on rapidly, and in some two out of three normal subjects a depressor response of

10 to 20 seconds' duration will be elicited. This stratagem will sometimes restore a normal heart rate in paroxysmal tachycardia.

States of pathological hypersensitivity occur in which pressure on the carotid sinus induces attacks of vertigo, syncope, and even convulsions. The lightest pressure, as during shaving or buttoning a collar, may be sufficient to provoke an attack. In some of these patients small tumours have been found pressing on the sinus, and in others there has been aneurysmal dilatation of one or both sinuses. The trouble is more common in later life and with hypertension, and is not to be regarded as psychogenic. In a suspected case the effect of anaesthetization of the carotid sinus with procaine should be observed. If this abolishes the attacks, surgical denervation may be recommended. (See also a reply given in the *Journal* of March 11, 1944, p. 380.)

Puberty Menorrhagia

Q.—*A girl aged 13½ years suffers from persistent menorrhagia. Her menses, which started a year ago, are regular. What treatment is advised?*

A.—Thyroid is often useful in the treatment of puberty menorrhagia. Begin with 1 grain daily and gradually increase the dose to the point of intolerance. Thereafter give a subtoxic dose daily for three months—irrespective of the time in the menstrual cycle. This treatment can be combined with calcium lactate or gluconate, 20 to 30 grains daily, also for three months. General measures, such as regular physical exercise, attention to the bowels, iron, and vitamin C, should also be kept in mind. Corpus luteum hormone can be administered only by injection, but if thyroid does not help, then try ethisterone 5 to 10 mg. t.d.s. by mouth, for seven days premenstrually and for the first two days of menstruation. If that fails, then methyl testosterone in a similar dose might be considered. Ergot preparations sometimes control the blood loss temporarily if given during menstruation, but are unlikely to have any curative effect. In any case there should be a natural tendency to spontaneous cure as the girl gets older.

Fullers' Earth

Q.—*I understand that "fullers' earth" consists of microscopic siliceous particles, both spicules and tubules, derived from the skeletons of water-deposited diatoms, and can therefore appreciate that a toilet powder made from it can be of benefit by virtue of its absorptive effects. Quite frequently, however, fullers' earth is blended with lanoline or similar materials to produce emollient preparations. In what way could the addition of the powder enhance the effect of such ointments?*

A.—A paste differs from an ointment because an amount of powder is incorporated in it; it is therefore less occlusive and less "heating." For this reason a paste is found suitable in many conditions where the more occlusive ointment would aggravate the congested and inflamed skin.

? Cavernous Angioma

Q.—*A man aged 36 has a small tortuous clump of varicose veins over the lower third of his left sterno-mastoid. He states it has been present since childhood without symptoms; but during the past two years it has become hard and painful on several occasions, and now the pressure of his collar gives him permanent discomfort. He shows no other signs of varicosity and is in good health. What are the probable causes of this condition and what treatment is advised?*

A.—The difficulty here is one of diagnosis, which cannot be made with certainty without seeing the patient. The abnormality has been present since childhood, and is therefore probably congenital. If this is correct, the condition is more likely to be a cavernous angioma than a true varicose vein. This view is favoured by the fact that it has on several occasions become harder and painful, for this change is known to occur in angiomata. If the patient is in good health and has no other similar lesion, we cannot be dealing with varicosity compensatory to blockage of deeper veins. If this view is correct, the best treatment would be excision.

Dupuytren's Contracture

Q.—*A man developed Dupuytren's contracture in his right hand at the age of 60 to 63. First signs of the same thing were observed shortly after his 67th birthday in his left hand. They have progressed very little in the following three years. Is there any known procedure for slowing down or checking their further development? Incidentally it may be of interest to state that the man's father died at the age of 63, having what was almost certainly Dupuytren's contracture in his right hand. The father was an accountant, the son a university lecturer.*

A.—There is no known method of checking the development of Dupuytren's contracture. The condition is due to a sclerosis and thickening of the palmar fascia, particularly affecting those processes which go to the ring and middle fingers. Its cause is unknown. Trauma and chronic recurring pressure may be exciting factors, and it may occur in several members of the same family, commonly in father and son. There is no satisfactory evidence to connect it with gout. At one time subcutaneous injections of thiosinamine (allyl sulpho-carbamide) used to be given with the intent of softening the fibrous tissue, but this proved of little or no value. Wearing a corrective splint at night might possibly slow the process, but it is hardly worth trying in a man of 70, for the condition is very slowly progressive and does not usually cause much inconvenience when of minor degree.

Bovine Tuberculosis

Q.—*Is it true that the incidence of bovine tuberculosis in children is higher in England than in the U.S.A., and is it true that in Great Britain less than 10% of the herds are tuberculin-tested?*

A.—Evidence favours the view that human tuberculosis due to the bovine bacillus is less frequent in the U.S.A. than in Great Britain. This evidence is, in part, based on the opinions of authorities from the U.S.A., and in part on figures of lower incidence of such conditions as tuberculous meningitis, in which bovine infection is common. Exact comparative figures do not, however, appear to be available.

The number of herds in Great Britain which are tuberculin-tested is comparatively small and certainly far below 10%. They fall into two groups—i.e., those which are dealt with as "attested" herds and those which comply with the designation of "tuberculin-tested." The attested herds are a very small proportion of the herds in the country. The "tuberculin-tested" licences on March 31, 1943, in England numbered 3,195, and on March 31, 1944, they were 4,630. These represent figures far below 10%. For example, in Somerset and Gloucestershire, two counties which have high figures for T.T. herds, the combined T.T. licences at the end of 1944 only represented about 6% of the milk-producing herds in the county.

Air Conditions and Chronic Bronchitis

Q.—*What effects have air conditions on chronic bronchitis? Is air-conditioning any use for chronic bronchitis if the patient can remain in the conditioned air during an attack?*

A.—Atmospheric conditions have a marked effect on chronic bronchitis: the bronchial mucous membrane is atrophic and therefore unable to deal satisfactorily with changes of humidity and temperature. Cold, especially damp cold, is unfavourable, but the optimum humidity varies in different types. A rarefied atmosphere is usually unsuitable for old patients, owing to associated emphysema.

Air-conditioning is very useful if the patient is able and willing to remain in the air-conditioned rooms throughout the winter, except when the outside conditions are favourable; this is seldom the case, and so its value is limited. Great benefit was obtained by one patient with tuberculous fibrosis and associated chronic bronchitis. In exacerbations it is of value from a symptomatic point of view, but if possible the aim should be to prevent these rather than to treat them.

Adiposis Dolorosa

Q.—*A middle-aged woman suffers from adiposis dolorosa. Could you suggest anything for her treatment?*

A.—There is no certain pathological basis for adiposis dolorosa, as distinct from other forms of hypothalamic-pituitary adiposity, but clinically the special feature, as indicated by the name, is the painful character of the fatty deposits and an associated miserable depressive outlook. The treatment of the latter is along psychotherapeutic lines, as can be undertaken by an understanding family doctor, and the treatment of the adiposity is conventional—namely, low-calorie diet, thyroid to the point of tolerance, and, if there is a water-retention element, ammonium chloride and mercurial diuretics.

Toxicity of Antiseptic Dyes

Q.—*Do dye preparations such as gentian violet have the effect of aniline dyes on tissues—i.e., local tissue necrosis? Is it safe or not, for instance, to mop out a sinus with a preparation of triple dye? Presumably all such preparations are being superseded by penicillin or sulphonamide powder.*

A.—This question seems to imply that gentian violet is not an aniline dye; it is. All the antiseptic dyes have some degree of tissue toxicity. This is not gross: they do no harm to skin, and the damage they do to exposed tissues is microscopical rather than anything which can be seen with the naked eye; it can, nevertheless, be shown that individual cells, such as leucocytes, are killed or inactivated by them. Gentian violet is less toxic than brilliant green. That gentian violet can do more good than harm, at least in a certain type of lesion due to a highly susceptible organism, is shown by its dramatic effect when applied (as a 0.1% solution in 50% glycerin) in thrush. Dye preparations should be "safe" enough in a sinus. Recent clinical studies with proflavine have shown that in chronic suppuration the tissues will withstand a higher concentration than can be applied to a fresh wound. Whether this treatment will do any good depends on the nature of the infection and other factors.

Oophorectomy for Chocolate Cysts

Q.—What is the best treatment for a patient who has had double oophorectomy for chocolate cysts and is suffering from great increase in weight with resultant lack of energy?

A.—If it can be assumed that the lesion underlying the chocolate-cyst formation was endometrioma, then replacement therapy with oestrogens should be avoided, lest it reactivate any islets of endometrioma remaining in the pelvis, and defeat one of the objects of the operation. The primary treatment of the obesity should be a strict diet on the usual lines, and this could with advantage be reinforced during the initial few weeks, and thereafter periodically, by limiting the intake of fluid and salt and giving ammonium chloride grains 10 t.d.s. by mouth. As regards hormone therapy, thyroid is likely to be most useful; begin with 1 grain daily, and gradually increase the dose until the patient becomes intolerant; then maintain it at a subtoxic level. Thyroid is particularly indicated if preliminary investigation shows that the basal metabolic rate is significantly decreased.

Absorption of Calcium

Q.—It is said that calcium is not adequately absorbed from the alimentary tract, and that, to be effective, it must be given intravenously. Is this true? Is calcium of value as an adjuvant in the routine treatment of pulmonary tuberculosis?

A.—It is quite certain that some calcium is absorbed from the alimentary tract. On a normal diet the urine contains 100 to 200 mg. of calcium a day, and this may be increased two- or three-fold by a high dosage of calcium salts by mouth. It is also possible that some absorbed calcium is excreted by the bowel. Nevertheless absorption is slow, and to secure a prompt pharmacological action, as for the relief of spasm, it is generally necessary to inject calcium salts intravenously or intramuscularly. The slow intravenous injection of 5 to 20 c.cm. of 5% calcium chloride solution or 10% calcium gluconate is often effective in relieving the abdominal pain, diarrhoea, and tenesmus of intestinal tuberculosis. Apart from this there is no indication for calcium in the treatment of pulmonary tuberculosis. For rational therapy with calcium by mouth very large doses must be given—e.g., 5 to 15 grammes a day of the carbonate, gluconate, lactate, or phosphate—and this would seem merely an added burden on the overworked alimentary tract of the consumptive patient.

Dermatitis Herpetiformis

Q.—What treatment might effect a cure in a case of dermatitis herpetiformis of 14 years' standing which apparently followed a "white leg"?

A.—Dermatitis herpetiformis is a rebellious condition, and often fails to respond to treatment, although spontaneous recovery is possible. There is no direct connexion between "white leg" and dermatitis herpetiformis. It is assumed from the question that arsenic or whole-blood injections have been tried. Sulphapyridine in small doses over a limited period has a temporary effect.

Fluorine in Toothpaste

Q.—In a leading article on fluorine and dental caries (JOURNAL, April 1, 1944, p. 461) it is suggested that fluoride might with advantage be added to toothpaste. Does the danger of mottled enamel from excess of fluorine exist only during the growing period, or does it exist at all ages?

A.—The danger of mottled enamel from an excessive intake of fluorine occurs only during the growth period, and not after the calcification of the teeth is complete.

INCOME TAX

Appointment: Travelling Expenses

H. H. holds a main and a part-time appointment. To carry out the duties of the latter the use of a car is necessary. The inspector of taxes has refused to allow the car expenses as a deduction for income-tax purposes. Is this correct?

*** Yes. The cost of travelling to the place where the duties are performed is not allowable if the earnings in question are chargeable to tax under Schedule E. (This does not apply to travelling between two places of employment if the expense arises out of a single appointment.)

"Pay-as-you-Earn" Deductions

K. employs two "casual" workers—a woman cleaner and a part-time secretary. Neither of them receives remuneration amounting to 20s. a week. Is he under any liability to deduct tax or report any particulars to the income-tax authorities?

*** No.

Deduction for Premises Owned and Occupied

"CAMFORD'S" house is rated at £105 gross and £81 net. On which amount should he calculate the deduction to be made from his profits for the professional use of the property?

*** The difference between the "gross" and "net" values represents the allowance for maintenance expenditure. The usual practice is to base the Schedule D deduction on the *net* value of the premises, and to claim as a further deduction the actual cost incurred from time to time on repairs, redecorations, insurance, etc., of that portion of the premises used for professional purposes. Cases may occur where by arrangement the practitioner deducts the *gross* value each year and, presumably, does not claim the actual expenditure, but such an arrangement is not legally correct nor is it likely to be satisfactory in the long run.

Cost of Assistant's Board and Lodging

J. D. has claimed £2 12s. 6d. per week as representing the cost of boarding his assistant in his own residence; the inspector of taxes considers 35s. per week adequate. Should he appeal?

*** It is not possible to give definite advice on a matter which depends so much on the particular facts of the case. Probably the best test is to calculate the over-all cost of running the establishment and divide it according to the number of residents—excluding the domestic staff and making any appropriate allowance for differences in quality of accommodation, etc. Unless a substantial amount of unrationed food is provided, the rationing system acts as a check on the rising expenditure on food.

Expense of Professional Course

"A1" completed a special course in hygiene and obtained a certificate which was necessary for the position he holds as assistant school medical officer. Is the expense of attending the course, etc., allowable as a deduction for income-tax purposes?

*** No. The courts would regard the expense as in the nature of capital outlay, the benefit from which would accrue in the future, and not as incurred in carrying out the duties of the office.

LETTERS, NOTES, ETC.

A Protective for Minor Burns

DR. F. SUGDEN (Newbury, Berks) writes: I had an interesting experience a fortnight ago when one of the analytical chemists employed by Messrs. Suntex managed to burn his fingers with boiling liquid paraffin. Not only was it boiling but actually on fire at the time—so much so that he had to put his hand under the cold tap to put out the flames. Forthwith he dipped his fingers into a solution of plantation rubber latex and came along to see me the next day. The thin coating of rubber appeared to be air-tight and so transparent that one could see quite well the damaged skin underneath. The patient told me that the pain ceased after two hours. As everything seemed very satisfactory I determined not to disturb the dressing until the 12th day, when I found the skin, though tender, completely healed, and the patient proceeded to carry on with his work without further dressings being applied. I have been supplied with a small quantity of latex solution and I propose to try it out further on minor burns.

Cause and Treatment of Stitch

MR. A. HOLLMAN (medical student, University College Hospital) writes: Having been a victim of "stitch" many times whilst cross-country running, I have been stimulated to inquire into cause and treatment. The writer of the reply to your correspondent's query as to the nature of stitch (see *Journal*, Feb. 10, p. 206) stated that "treatment is practically limited to cessation of exercise." In my experience firm pressure with the hand over the affected area always abolishes the pain; and frequently, but not always, the pain does not recur when the hand is removed. Leaning over to the affected side also helps to relieve the pain. It is interesting how little exercise may be needed to provoke stitch. I have had a sharp attack from walking only 30 yards after a meal. It is not my experience that stitch occurs with greater frequency in cold than in warm weather.

The Teaching Hospitals

"X." writes: Does not the Treasury grant, out of the pockets of the general public, recently announced by the Chancellor of the Exchequer, remind us of the national character of all the voluntary teaching hospitals, both in London and the Provinces. For the breadth of outlook which the national comprehensive service will demand, it will in future be more necessary than ever for the teaching hospitals steadily to continue in the policy of drawing upon graduates of all our universities in a united effort for the health and physical well-being of the British people. Medicine, of all the scientific arts, needs constantly the influence of broad-mindedness and interchange.

Thermometry

Mr. F. R. WALTERS, F.R.C.S. (Farnham) writes: Your contributor (*Journal*, Feb. 10, p. 206) who answered questions about clinical thermometry has not taken into account the atmospheric and other conditions affecting mouth temperatures. In a cool room, or out of doors, misleading readings will follow if the patient opens his mouth for any purpose with the thermometer in it, or shortly before the test; so that repeated inspection of the thermometer is inadvisable in such a place, and where more accurate results are important rectal temperatures are more reliable. Your contributor also writes as if there were a constant difference between rectal, mouth, and axillary temperatures; but this is not the case. In pulmonary tuberculosis, for example, it often happens that rectal temperatures are the same as mouth temperatures in the same patient at the same time; while at other times (perhaps the same day) there may be several degrees of difference. Febrile rises and warnings of complications may be missed if mouth temperatures are relied upon. After exercise, mouth temperatures may be lowered while rectal temperatures are raised. I refrain from giving illustrative cases.

Artificial Respiration and First-aid Instruction

Dr. J. L. BARFORD (Stoke Park, Guildford) writes: As it may be a novelty I venture to mention a very small "tip" which I have employed recently when demonstrating artificial respiration. It simply consists of putting (smuggling, for dramatic effect) a whistle into the casualty's mouth. On expiratory effort the clearness of the airway is made abundantly clear and impresses the students remarkably. It can be employed in Schäfer's, the rocking, or any other method, except, of course, Laborde's! Other instructors might like to copy. Incidentally I note that Dr. F. C. Eve (Jan. 6, p. 21), when describing the successful revival of a drowned child by rocking, states that this was the first (successful) resuscitation by manual rocking. Surely the rocking and swinging employed to induce the newborn infant to breathe, although not strictly a resuscitation, comes under this category? Perhaps I am so old-fashioned that this procedure, which I remember employing successfully, is now superseded.

Hydatidiform Mole

Dr. C. W. F. BURNETT (West Middlesex County Hospital) writes: The answer given under this heading in your issue of Jan. 20 (p. 105) contains no reference to modern theories of aetiology. The most convincing of these—formulated, I believe, by Mr. Barton Gilbert some seven years ago—ascribes the mole formation to the failure of development of embryonic blood vessels in the trophoblast. Food substances passing from the maternal blood through the villous wall by the vital activity of its constituent cells are, therefore, not conveyed to the embryo, which rapidly dies and disappears; the mesoderm of the villus retains the food products, and by a process of osmosis becomes oedematous and cystic. The cytotrophoblast, thriving on the highly nutritious contents of the villus, grows rapidly, assumes invasive characteristics, and secretes increased quantities of chorionic gonadotrophin as your answer describes. The suggestion has been made that this failure of formation of vascular tissue may be one of the results of Rh incompatibility in the parents; however, recent research does not confirm this hypothesis.

Pyretotherapy

Dr. W. F. COOPER (Kingston Hill) writes: Dr. J. R. Edge (Jan. 13, p. 61) suggests that pyretotherapy might be "worthy of a trial." Though the method is used in many cases, no one seems to consider what it is that produces the good effects, or *why* it is suitable in some cases and not in others, except, perhaps, as to antagonism between malaria and spirochaetes. By merely raising the temperature of blood and also of tissues, by whatever means, certain changes must occur; we do not know them all, but do know some of them. For instance, there will be an increase in the number of ions per unit volume, in ionic activity, giving rise to variations in physical effects such as conductivity, *p*H, Eh, and so on. Some of these changes can be brought about by ordinary therapy, and my experience is that they are effective. Information valuable for treatment would result if more attention were given to the effects of raising the temperature. Then one would not consider whether cases were "suitable to" pyretotherapy, but whether pathological conditions would be ameliorated by the effects of it. I consider that cases that are "susceptible" are those due to infection and/or inflammation; but it is not necessary to adopt the higher temperature. This is hinted at in Dr. Edge's letter, but insufficient data are given. A suitable examination of blood should have been helpful; that alone might have made it certain whether his children had an infection or not, and also whether any of the factors produced in pyretotherapy would have been beneficial.

Occupational Cause of Raynaud's Disease

Dr. D. H. MACCORMACK (Manchester) writes: With reference to the answer given under this heading (Jan. 20, p. 106), it is not made clear whether or not Raynaud's disease and "dead hand" are phases of one and the same condition. This is a point on which most textbooks still appear to be vague. However, I have personally no doubt that "dead hand" is merely an early stage, and that unless the causative factors are removed, it may, in many cases, develop into Raynaud's disease proper. Incidentally, I believe that "dead hand" is listed as an industrial condition in Germany and other countries, and it is difficult to understand why it has so far not found its way into the British schedule.

Romberg's Sign

Dr. E. W. SQUIRE (Reading) writes: Is the answer (Jan. 20, p. 106) relative to Romberg's sign complete? What of the afferent tract through the retina and optic nerve to the visual centre, thence to the cerebellar centre controlling balance? Does not this tract play an important part in maintaining balance in conjunction with the special sensory nerves? Apropos of this sign I have found it marked in only two cases on the Military Service Boards during the last 5¼ years—i.e., since May, 1939—during which time some thousands of recruits have passed under my observation.

Translation, Please

Dr. F. DURAN-JORDA, M.D.Barcelona, writes from Manchester: I think I can enlighten Dr. Maurice McElligott in regard to the Spanish words for diseases produced by *Bacillus anthracis*. *Bacillus anthracis* is known as "carbunco o pustula maligna," and the common name for this is "carbon." In Catalan the scientific title is "carbuncle" and the common name "carbo." For the staphylococcal infections equivalent to a boil the word in Spanish is "forunculosis," commonly known as "grano." A group of boils together is "antrax." In Catalan the corresponding names are "foruncle" and "antrax," the latter being referred to generally as "vesper," coming from "wasp." As I am not a surgeon myself and have not treated any of these cases there may be more names in use, but the general scientific terms are as given here.

Dr. H. A. FULLER, M.D.Paris, writes from Glasgow as follows: I quite appreciate Dr. McElligott's difficulty (*Journal*, Jan. 13, p. 70) over the words "charbon" and "anthrax" as used in France, and he may find the following helpful. He is quite right in translating "charbon" as the equivalent of the English word anthrax, and "anthrax" as meaning "carbuncle." Those are the meanings of these two words in France to-day; but it was not always so. Formerly, in pre-bacteriological days, the word "charbon" (from Latin *carbo*) was applied not only to malignant pustule but also to boils, carbuncles, and the buboes of plague, in France and, apparently, from what he says about Ireland, in other countries as well. Evidently the word was applied to any small *hot* tumour (a burning coal). "Carbuncle" (from *carbunculus*, diminutive of *carbo*) was retained in Britain to designate the multiple boil, whereas in France it is the Greek word anthrax (also meaning coal, of course) which was retained for this. Maxwell and collaborators (*Terminologia Medica Polyglotta*; Churchill, London, 1890) give: French, anthrax (*bénin*); English, carbuncle; German, Anthrax, Karbunkel, Brandschwär; Spanish, antrax, avispero (wasps' nest); and for: French, anthrax (*malin*), charbon; pustule maligne; English, anthrax (malignant); German, Milzpocke, Milzpustel. They also give: French, pustule maligne, sang de rate; English, malignant pustule, charbon, splenic fever, woolsorter's disease, malignant anthrax; German, Milzbrand, Karbunkelkrankheit, Brandblatter; Spanish, pústula maligna.

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Corrigenda

Owing to delay in the receipt of corrected proofs there were three errors in Dr. M. N. Pai's article "Changes in Personality after Cerebrospinal Fever" published last week. In the table showing changes in personality after C.S.F. the figure opposite "Fairly good" in the second column should be 10; in the last paragraph of the section on headache the word "post-confusional" should be "post-contusional"; the name "Rosenoff" in the bibliography should be "Rosanoff."

In his letter on selenium poisoning in the *Journal* of Feb. 3 (p. 276) Mr. A. L. Bacharach meant to write "selenium might thus interfere with the *in vivo* synthesis of cystine"—not *in vitro*.